

Statewide Rail Plan Commonwealth of Virginia Working Draft

July 14, 2008



Table of Contents

Chapter 1

Introduction and Purpose	1
Transportation Goals	3

Chapter 2

Planning Context and Considerations	5
Past Accomplishments	6
Population and Growth Trends	7
Economic Development and Port-Rail Modal Interface	7
Transportation System Considerations	9
Freight	12
Coal	16
Passenger Rail	16
Land Use, Natural Resources and Environmental Influences	18

Chapter 3

Overview of the Virginia Rail System	21
Virginia Rail Tonnage	23
Rail Types and Services	23
Class I Railroads (Norfolk Southern and CSX)	25
Class III Shortline Railroads	28
Passenger Rail	32
The Business of Freight Railroads	40

High Speed Rail	43
Rail Safety	47

Chapter 4

Potential Improvements to the Rail System	49
Methodology	49
Class I and Shortline Railroads	52
Ports of Hampton Roads (I-64, I-95 and Route 460)	62
Passenger Rail Corridor Initiatives	68
Intercity Rail	74
High Speed Rail	78

Chapter 5

Future Funding Opportunities and Needs for Rail Projects	79
Sources of Funds	80
Summary	84

Chapter 6

Next Steps and Conclusion	85
Public Involvement	85
Future Rail Plan Updates	86
Conclusion	86

List of Figures

<i>Figure 1-1</i> Key Transportation Corridors	2	<i>Figure 3-3</i> Virginia Rail Tonnage – Inbound, Outbound and Internal (2004)	24
<i>Figure 2-1</i> Population Change Projections for Virginia	7	<i>Figure 3-4</i> Rail Tonnage Passing through Virginia (2004)	24
<i>Figure 2-2</i> Economic Development near the Virginia Inland Port	8	<i>Figure 3-5</i> Examples of Unit Coal Train, Merchandise and Double-Stack Intermodal Rail Services	25
<i>Figure 2-3</i> Average Total AADT and Truck Percentages All Count Segments – Top 30 Routes (2005)	9	<i>Figure 3-6</i> Class I Railroads in Virginia (Norfolk Southern and CSX)	26
<i>Figure 2-4</i> Virginia Highway and Rail Miles	10	<i>Figure 3-7</i> National Rail Network	27
<i>Figure 2-5</i> Sample Time and Costs for Airline Trips to Washington, DC and Richmond from Selected Virginia Cities (June 2008)	10	<i>Figure 3-8</i> Norfolk Southern System Map	28
<i>Figure 2-6</i> Global Shipping Routes with the Ports of Hampton Roads	11	<i>Figure 3-9</i> CSX Transportation System Map	29
<i>Figure 2-7</i> Increase of Containerized Cargo (TEUs) at Virginia Ports	12	<i>Figure 3-10</i> Shortline Railroad System	30
<i>Figure 2-8</i> U.S. Freight Tonnage by Mode 2005 – 2035	12	<i>Figure 3-11</i> Shortline Railroads – Summary of Annual Carloads (2007)	31
<i>Figure 2-9</i> U.S. Truck Freight Flows 2005 – 2035	14	<i>Figure 3-12</i> Amtrak National Passenger Rail Routes	33
<i>Figure 2-10</i> U.S. Rail Freight Flows 2005 – 2035	15	<i>Figure 3-13</i> Amtrak Passenger Routes Serving Virginia	34
<i>Figure 2-11</i> Rail Current Volumes Compared to Current Capacity	16	<i>Figure 3-14</i> Annual Amtrak Ridership by Station – Virginia (2007)	35
<i>Figure 2-12</i> Rail Future Volumes in 2035 Compared to Unimproved Capacity	17	<i>Figure 3-15</i> Amtrak Annual Virginia Ridership (2000 – 2007)	35
<i>Figure 2-13</i> Virginia Freight Tonnage by Mode and Direction	17	<i>Figure 3-16</i> Amtrak On-Time Performance of Passenger Routes Serving Virginia	36
<i>Figure 2-14</i> Virginia Freight Projections by Mode (2035)	18	<i>Figure 3-17</i> Amtrak – Virginia Ridership – Virginia Routes	37
<i>Figure 2-15</i> Coal Shipments 1995 – 2008	18	<i>Figure 3-18</i> VRE Ridership, July 1997 – May 2008	39
<i>Figure 2-16</i> VRE System Map	19	<i>Figure 3-19</i> VRE On-Time Performance, July 2001 – May 2008	39
<i>Figure 2-17</i> Fuel Efficiency in Transportation	20	<i>Figure 3-20</i> VRE Causes of Delay	39
<i>Figure 3-1</i> Existing State Rail Map (2007)	22	<i>Figure 3-21</i> High Speed Corridors	44
<i>Figure 3-2</i> Virginia’s Current Rail System Privately-Owned by Freight Railroads	23	<i>Figure 3-22</i> Commonwealth Railway Mainline Safety Relocation Project	48

<i>Figure 4-1</i>	Potential Rail Investment Locations	50
<i>Figure 4-2</i>	CSX National Gateway Corridor Improvement Locations	53
<i>Figure 4-3</i>	Norfolk Southern Crescent Corridor Initiative	55
<i>Figure 4-4</i>	Norfolk Southern Heartland Corridor Location	57
<i>Figure 4-5</i>	Norfolk Southern Coal Corridor Location	58
<i>Figure 4-6</i>	Shortline Railroad Cost for System Improvements	60
<i>Figure 4-7</i>	Shortline Railroad Locations	60
<i>Figure 4-8</i>	Shortline Railroads – Annual Carload by Commodity Data	61
<i>Figure 4-9</i>	Aerial View of NIT Central Yard Improvements	63
<i>Figure 4-10</i>	Estimated TEU Removal	63
<i>Figure 4-11</i>	Craney Island Project Improvements	64
<i>Figure 4-12</i>	Estimated TEU Removal	65
<i>Figure 4-13</i>	Norfolk Portsmouth Belt Line Railroad Improvements	67
<i>Figure 4-14</i>	Alexandria to Manassas Route	69
<i>Figure 4-15</i>	Gainesville to Haymarket VRE Expansion Route	70
<i>Figure 4-16</i>	Gainesville to Haymarket Route Ridership Projections	71
<i>Figure 4-17</i>	Fredericksburg to Washington, DC VRE Expansion Route	73
<i>Figure 4-18</i>	Urban Crescent Express Ridership Projections	75
<i>Figure 4-19</i>	Urban Crescent Express Route	75
<i>Figure 4-20</i>	Proposed TransDominion Express (TDX) Corridor Location	77
<i>Figure 4-21</i>	Southeast High Speed Rail Alignment	78

<i>Figure 5-1</i>	Rail Program Revenue Outlook	81
<i>Figure 5-2</i>	S. 294 and H.R. 6003 Grants to States for Rail and Congestion Reduction Projects	83
<i>Figure 5-3</i>	Heartland Corridor Tunnel Clearance Funding Sources	84
<i>Figure 5-4</i>	Virginia Railway Express Revenue Funding Sources	84

Chapter 1

Introduction and Purpose

The Commonwealth's extensive transportation network connects people, places and products, both locally and globally. By providing access via rail, roadways, seaports and airports to desired activities and goods, Virginia's transportation system creates the foundation for the economy and future economic development. Yet, as noted in Virginia's Transportation Performance Report (2006), transportation remains one of the most urgent problems facing Virginia today due to increasing costs for both new transportation improvements and maintenance of existing systems. Transportation needs continue to greatly outpace available funding.

The Virginia Department of Rail and Public Transportation (DRPT) is the state agency for rail, transit and congestion management in Virginia. DRPT has the flexibility to provide diverse transportation solutions to move more people and goods statewide by focusing on projects that deliver public benefits for the investment of public funds.

The Commonwealth has made great strides in incorporating forward-thinking planning and improvements to support the creation of a comprehensive, multimodal transportation corridor network. Specific examples of this thinking and commitment to integrating passenger and freight rails needs into Virginia's overall transportation network include:

- Establishment of the Rail Enhancement Fund and Rail Advisory Board in 2005 created the first dedicated source of funding for passenger and freight rail improvements.
- To move more freight from the Ports of Hampton Roads, the Commonwealth is participating in the Heartland Corridor Project sponsored by Norfolk Southern Railway that will take more than 150,000 trucks off of the road on an annual basis.
- Virginia has allocated more than \$151.55 million in rail funds for the I-95 and I-81 corridors to relieve congestion; advance freight, commuter and intercity passenger rail; and advance higher-speed rail, including building a new bridge over Quantico Creek to eliminate a major congestion point between Washington, DC to Richmond corridor.
- The Maersk APM Terminal, which opened in July 2007, was the first privately owned and operated port terminal developed in the United States. This project received state rail funding that supported the construction of an on-dock rail yard to support movement of goods on rail rather than on Virginia roads. The first double-stack intermodal train served the terminal in May 2008.

Rail transportation plays an important role in Virginia's evolving transportation network, reducing highway congestion and pollution by redirecting cargo from trucks to rail and diverting people from cars to passenger rail. DRPT, as the leading state agency for rail, periodically identifies and updates rail needs, priority corridors and capacity chokepoints across the state through the development of a Statewide Rail Plan. This report is an update of the 2004 plan and illustrates the significant progress since that document. More importantly, this update addresses new challenges and opportunities with projects that support a vision of future prosperity.

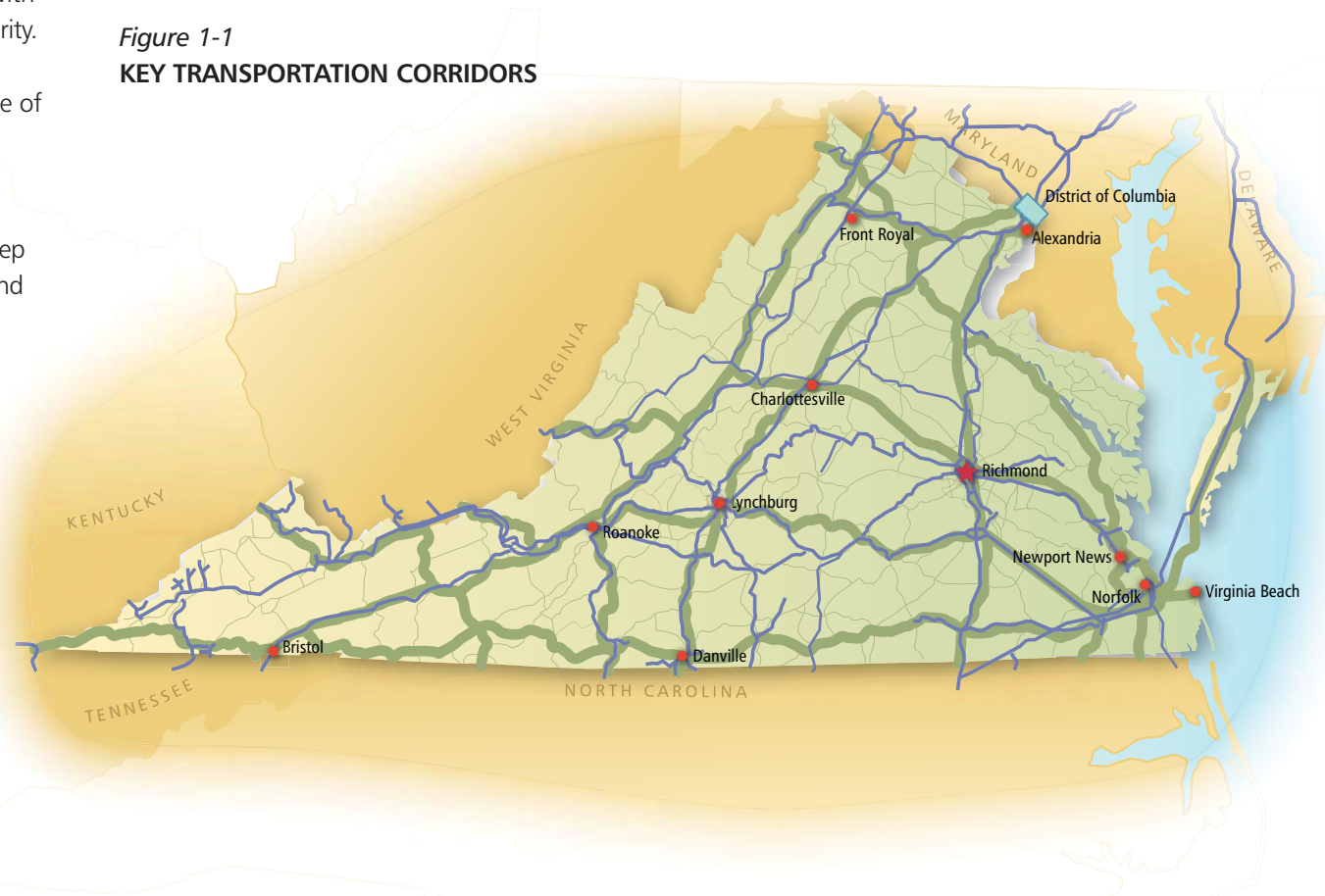
This draft report represents a summary update of the Statewide Rail Plan published in 2004. Moving forward, DRPT will produce comprehensive statewide plans on a five-year basis, supplemented by annual updates to keep pace with emerging trends, priorities, costs and needs. This Statewide Rail Plan is being developed in accordance with guidelines set out by the Federal Railroad Administration for state plans in order to ensure that Virginia's rail plans are consistent with federal funding requirements.

The current document is intended to provide high-level information on existing rail conditions and programs in Virginia today and rail needs for the future, with a focus on identifying key corridors (see *Figure 1-1*) and potential investments.

While this draft Rail Plan identifies high priority projects, it does not recommend funding allocations or provide an implementation plan. Funding and the implementation plan for short term projects will be defined in the Rail Action Plan scheduled for publication in September 2008. The Rail Action Plan will outline a strategy for the allocation of resources between passenger and freight rail projects statewide, with a focus on identifying specific projects for funding and implementation over the

next six years. Projects will be narrowly defined, with anticipated funding sources for both public and private sector investment. Projects will be developed based on the needs and priorities identified in the draft Statewide Rail Plan, and the selection of projects for implementation in the next six years will be guided by the evaluation of projects based on the achievement of state transportation goals and the determination of public benefits to be achieved through each project.

Figure 1-1
KEY TRANSPORTATION CORRIDORS





Freight rail transportation helps people save on the cost of goods by conserving fuel and providing more cost-effective shipping choices for many consumer products.

The Statewide Rail Plan will be finalized upon completion of the Rail Action Plan. The final Statewide Rail Plan will include all short- and long-term rail priorities for Virginia, providing direction for critical rail projects that will support a cost-effective and efficient rail network. Ultimately, rail transportation in Virginia will provide more transportation choices for people and goods, congestion relief for the state's highway system, energy savings through reduced fuel consumption and better air quality through reduced emissions.

The rail system is vital for the Commonwealth's economy, connecting Virginia to the global marketplace both overseas through connections at the Ports of Hampton Roads and in North America through rail connections that extend to the nation's East and West Coasts, north to Canada and south to Mexico.

The Commonwealth is committed to enhancing partnerships with the private sector, including railroads, local governments and regional planning

organizations, to attract private capital and to achieve its strategic goals.

The Statewide Rail Plan has been developed in coordination with other Commonwealth transportation agencies, including the State Multimodal Office, VDOT, the Virginia Port Authority (VPA) and the Virginia Department of Aviation (DOAV). Input or information was also received from major rail stakeholders including the Federal Railroad Administration (FRA), the Virginia Economic Development Partnership (VEDP), Norfolk Southern, CSX Transportation (CSX), Amtrak, Virginia Railway Express (VRE), Regional Metropolitan Planning Organizations (MPOs), Regional Planning District Commissions (PDCs), Virginia's ten shortline railroads, the U.S. military (U.S. Army Surface Deployment Command) and other organizations. Public input has been included through a comprehensive public involvement program.

Transportation Goals

The Statewide Rail Plan has been developed using the Commonwealth Transportation Goals, DRPT Strategic Plan Goals and Transportation Goals for Rail.

COMMONWEALTH TRANSPORTATION GOALS

- Safety and Security
- Preservation and Management
- Mobility, Accessibility and Connectivity
- Economic Vitality
- Land Use and Quality of Life

DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION STRATEGIC PLAN GOALS

- Assist in managing the growth in congestion on Virginia's highways.
- Improve access for the general public and business to alternative transportation (public transportation, carpools, vanpools, human service transportation, passenger rail and freight rail) and telecommuting.
- Provide access and improvements to Virginia's railways to encourage economic development and reduce truck traffic on Virginia's highways.
- Seek the highest possible return on investment to maximize limited funding.
- Increase communication to the general public, businesses and community decision-makers on alternative transportation choices and telecommuting.
- Implement best practice management tools and techniques to improve customer service and accountability.



Virginia Railway Express provides commuter rail service in the Northern Virginia region.

TRANSPORTATION GOALS FOR RAIL

In accordance with the Governor's Transportation Accountability Commission guidelines, the implementation of this rail plan will be conducted with the following goals:

- Safety and Security:** Rail improvements will be developed to provide a safe and secure transportation system – particularly as high speed rail services are brought online. The railroads in Virginia have strong safety records. However, constant diligence, education in rail safety and security and improvements at highway-rail grade crossings will continue the Commonwealth's past history of annual reductions in rail-related injuries and fatalities. Metrics include:
 - Number and rate of fatalities (grade crossings and trespassers)
 - Number and rate of injuries (grade crossings and trespassers)
 - Increase in the number of grade separation structures
 - Increase in the number of at-grade crossings closed
- Preservation and Management:** DRPT will work with Virginia's private railroad companies to preserve and manage the existing rail transportation system through technological improvements and more efficient operations. Metrics include:
 - Improve on-time performance for both freight and passenger rail trains
 - Percentage of Virginia's shortline rail system in need of repair
 - Percentage of passenger trainsets that exceed replacement age
 - Encourage self-sufficiency of passenger operators by higher farebox revenues
- Mobility, Accessibility and Connectivity:** DRPT and our public-private partnerships with the rail industry will develop projects that facilitate the efficient movement of people and goods and improve interconnectivity of all transportation modes. Metrics include:
 - Increase passenger rail ridership
 - Increase diversion of freight from trucks to rail
 - Expand rail services to developed markets
- Economic Vitality:** DRPT will develop projects that improve Virginia's economic vitality and facilitate the coordination of rail transportation, land use and economic development planning activities. Metrics include:
 - Use of Rail Industrial Access and Rail Enhancement Funds to retain existing businesses and attract new businesses (number of jobs created, number of jobs maintained and economic impact of projects)
- Land Use and Quality of Life:** Diversion of trucks to freight rail and people in cars to passenger rail will provide significant environmental benefits due to decreased pollution and improvements in air quality and water quality, as well as decreased energy consumption. Metrics include:
 - Tons of transportation-related emissions saved by rail improvements
 - Number of trucks diverted from highway usage to freight rail usage
 - Fuel usage saved by diversion of trucks to freight rail and people from cars to passenger rail

Chapter 2

Planning Context and Considerations

Successful planning cannot occur in a vacuum. Planning must take into consideration past accomplishments, current conditions and anticipated trends. For the Virginia Statewide Rail Plan, several demographic and societal trends impacting its rail system are noteworthy:



Richmond's newly renovated Main Street Station brings together the best of today's rail travel for passengers in and around Virginia.

- By 2030, the population of the United States is expected to grow by 5 percent. In that same period, Virginia's population is expected to increase 30 percent, from the current 7.5 million to 9.8 million.
- Much of that growth will take place in Virginia's major metropolitan areas, which are growing faster than the rest of the state. Two of every three Virginians now live in Northern Virginia, Richmond or the Hampton Roads metropolitan areas.
- Virginia's transportation system, responsible for moving people and goods into, out of, within and through the state via roadways, air, water and rail, is over-crowded. Its major transportation corridors – already experiencing congestion-related travel delays – will see even more demand. This could jeopardize the Commonwealth's ability to maintain a business environment that has earned it the title of best state in the country for business.
- The Port of Virginia's growth in containerized cargo is expected to increase by 350 percent between 2005 and 2035. By 2011 it will be at full capacity of existing terminal infrastructure.
- Cargo in the nation is expected to double from 15 billion tons in 2005 to approximately 30 billion tons in 2035. Although this prediction shows the vast majority of freight being handled by trucks, highway congestion and the increasing cost of fuel make an increase in the percentage of cargo carried by rail a necessity. Virginia's statewide long-range multimodal plan (VTrans2025) has recommended moving more cargo by alternatives other than trucks.
- There is global competition for finite resources of oil and coal, causing the price of a barrel of oil to nearly double in the last year alone. The pressure is on to find ways to become more energy efficient and reduce greenhouse gases.

- ⚡ Railroads are typically three or more times more fuel efficient than trucks. Every ton-mile of freight that moves by rail instead of truck reduces greenhouse emission by 67 percent or more.
- ⚡ After a period of relatively low coal exports, increased global demand for coal has caused a rapid growth in coal exports. In the first quarter of 2008, for example, there was a 62 percent increase over the same period in 2007. Coal is the largest freight commodity in Virginia, comprising 59 percent of tonnage. All coal from the Appalachian coalfields to the Ports of Hampton Roads is carried by trains (none by long haul trucks).
- ⚡ Various DRPT and Commonwealth transportation corridor studies have identified the need for improved and increased passenger rail services in Virginia (both by VRE and by Amtrak) to meet the increased demands that population growth will put on the transportation infrastructure of Virginia's metropolitan areas.
- ⚡ Capacity is a significant concern for both passenger and freight rail. The U.S. Department of Transportation is predicting that freight railroad demand will increase by 88 percent between 2002 and 2035. VRE ridership is expected to double in the next 20 years.

These trends have been factored into the development of the Statewide Rail Plan. They are described in more detail in this chapter.

Past Accomplishments

In the past six years, Virginia has worked to incorporate rail planning and improvements into an integrated multimodal transportation corridor network. Significant legislative accomplishments include the creation of the Rail Enhancement Fund (REF) and Rail Advisory Board in 2005 and the addition of general funds added to the REF program to address critical needs in Virginia's I-95 and I-81 transportation corridors.

Virginia has been one of the leading states in implementing rail improvements to support rail access for businesses and assuring shortline railroad viability. Investments to alleviate congestion, increase on-dock rail movements from the Ports of Hampton Roads and to advance higher-speed rail in the Commonwealth top the list of rail priorities. To make headway in these crucial areas, the Commonwealth has:



Freight rail helps connect domestic and international goods shipped to and from the Port of Virginia to markets nationwide.

- ⚡ Developed the first dedicated source of funding for passenger and freight rail improvements in Virginia's history. Initiated in 2005, the REF supports improvements for passenger and freight rail transportation that deliver public benefit through public private partnerships, such as:
 - Improving the movement of freight from the Ports of Hampton Roads through a public private effort involving Norfolk Southern and several states to construct a double-stack container train corridor between the Ports of Hampton Roads and Columbus, OH. In Virginia, the project includes raising tunnels to accommodate the taller trains and constructing new intermodal terminal facilities in the Roanoke region.
 - Improving the movement of double-stack freight to/from the Ports of Hampton Roads through public private partnership efforts with CSX to remove vertical obstructions on the CSX National Gateway system which extends from Atlanta, GA to the Northeast.
 - Doubling the on-dock rail yard to transfer containers to/from rail at the new Maersk APM Terminal marine facility at the Ports of Hampton Roads, a project utilizing shared public private funding.
 - Relocating approximately 4.5 miles of existing rail lines owned by the Commonwealth Railway shortline from urban neighborhoods in Portsmouth and Chesapeake to the rail-ready highway medians of Route 164 and I-664, a project due to be completed by late

2009. This corridor will be used to serve both the planned Craney Island Marine Terminal and the recently completed Maersk APM Terminal.

- ❑ Strengthened the shortline railroad industry in Virginia through the Rail Preservation Fund. Major projects recently completed include improvements on portions of the Buckingham Branch railroad that handles Amtrak intercity passengers trains and improvements on the Commonwealth Railway to provide Norfolk Southern and CSX access to major intermodal facilities at the new Maersk APM Terminal and the future Craney Island Marine Terminal.
- ❑ Supported Commonwealth economic development through the Rail Industrial Access Fund since 1986, providing rail access to businesses in Virginia that generated 25,000 new jobs and approximately 181,000 railcars — the equivalent of taking 634,000 trucks per year off of the highway system.
- ❑ Provided essential rail congestion relief including building the new railroad bridge over Quantico Creek on I-95 to remove the last single-track section of the Washington, D.C. to Richmond corridor.

Population and Growth Trends

Transportation, including passenger rail and freight, is driven by a number of key factors. The primary factors are population density and growth trends for the future. The U.S. population, currently approximately 300 million, is expected to grow by

21 percent to 378 million by 2035. For Virginia, the projections are even greater. According to the Virginia Employment Commission, between 2007 and 2030, Virginia's current population of 7.5 million will increase to approximately 9.8 million – a 30 percent increase (*Figure 2-1*). The Commonwealth's population growth rates far exceeds the 5 percent rate of the U.S. as a whole.

Most of the growth is due to people relocating to the Commonwealth. They are drawn to Virginia's economic opportunities in its urban areas. As a result, Virginia's major metropolitan areas are growing faster than the rest of the state. Two of every three Virginians now live in Northern Virginia, Richmond or the Hampton Roads metropolitan areas. And one of every three lives in the Northern Virginia area. For the rest of the state, 70 percent of

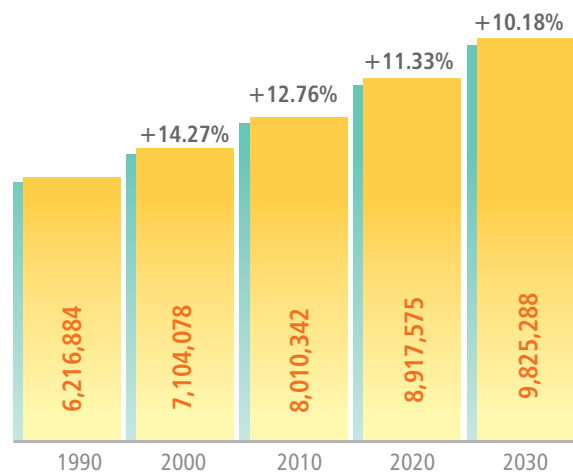
all localities have gained population while only 20 percent have lost population.

Economic Development and Port-Rail Modal Interface

Almost 11,000 high-tech companies and 30 Fortune 1,000 firms are located in the state, contributing to Virginia's economy. Rail transportation improvements provide direct economic benefits by reducing the costs of transportation; expanding the accessibility of businesses to suppliers, labor and consumer markets; and attracting new entrepreneurial opportunities to a community or region. An efficient transportation network with rail access to major shipping and travel destinations in Virginia and nationwide is a powerful combination for potential economic development. The Virginia Port Authority estimates that over 60 million square feet of additional distribution center space will be needed over the next 25 years to keep pace with containerized exports and imports in Virginia. The Commonwealth's rail and highway transportation system allows companies to locate these distribution centers throughout the state – often in rural areas where land costs are less expensive and an available workforce is nearby.

Business climate is influenced by a number of factors, including the cost of labor, transportation and energy; tax and regulatory burdens placed on businesses; and quality of life. Centrally located on the U.S. East Coast, Virginia's integrated transportation system of highways, railroads, airports and seaports ensures that businesses can reach all global markets and get shipments from

Figure 2-1
**POPULATION CHANGE PROJECTIONS
FOR VIRGINIA**



Source: Virginia Employment Commission

suppliers more efficiently. Highlights of Virginia's transportation system include:

- ❑ Twelve freight railroads and two passenger railroads operate on more than 3,400 miles of railway in Virginia, of which more than 3,200 miles are Class I railroads (the largest railroads in the U.S.). Two of the nation's largest railroads operate in Virginia: CSX Corporation and Norfolk Southern Corporation, which is headquartered in Norfolk.
- ❑ Fourteen commercial airports serve Virginia, including two of the nation's busiest: Washington Dulles International and Ronald Reagan Washington National.
- ❑ The Port of Virginia offers world-class shipping facilities and a schedule of approximately 3,000 sailings annually to over 250 ports in 100 foreign countries. The Port, offering one of the largest intermodal networks on the East Coast, handled 2.12 million 20-foot equivalent units (TEUs) in 2007 and moved more than 28 percent of its total business by rail. The new Maersk APM Terminal, the first private terminal in the U.S., at Portsmouth opened in 2007 and will be a major container terminal on the East Coast.
- ❑ The Virginia Inland Port in Front Royal serves as a regional intermodal facility and acts as a collection point for containers from West Virginia, Ohio, Pennsylvania, Northern Virginia and elsewhere (*Figure 2-2*).

Figure 2-2

ECONOMIC DEVELOPMENT NEAR THE VIRGINIA INLAND PORT



Source: Virginia Port Authority

- The Port of Richmond is a multimodal freight and distribution center located on the James River, adjacent to I-95, offering service to northern Europe, the United Kingdom, Iceland, the Mediterranean, Canada, South America, Mexico and the Caribbean.
- Virginia's highway system features more than 70,000 miles of interstate, primary and secondary roads, including eight major interstate routes: I-95, I-85, I-81, I-77, I-66, I-64, I-495 and I-395.

Virginia offers six foreign trade zones designed to encourage businesses to participate in international trade by effectively eliminating or reducing customs duties. Numerous subzones are also provided and additional ones can be designated to enhance the trade capabilities of specific companies.

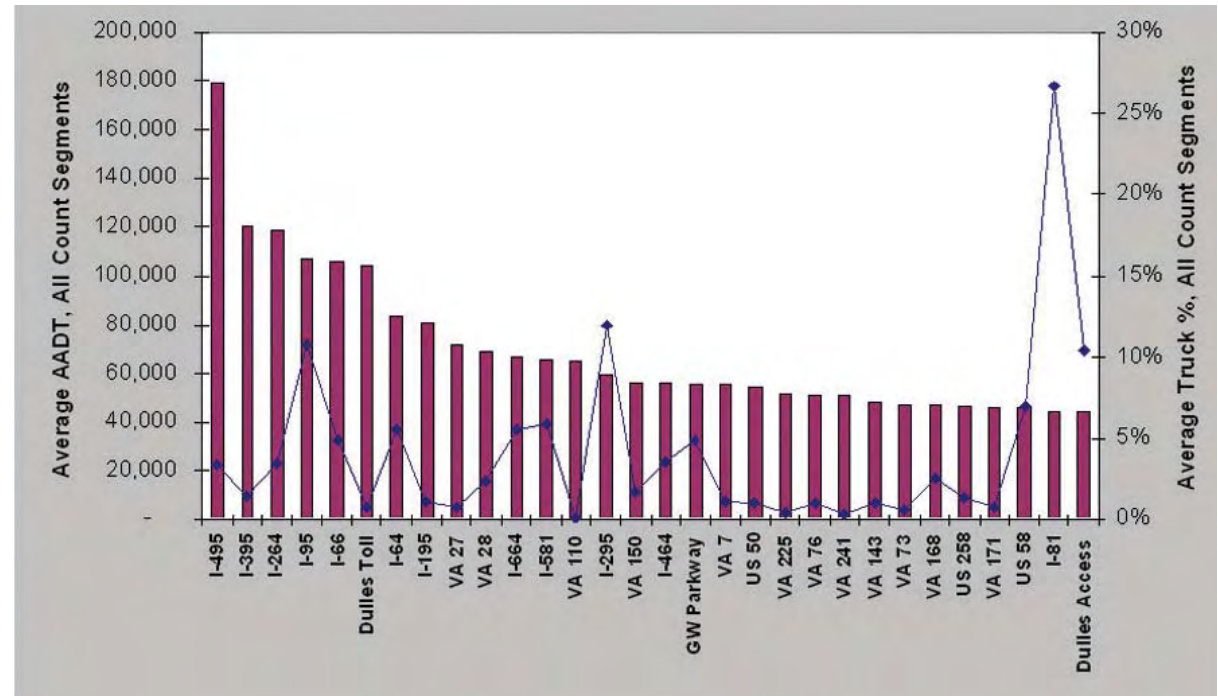
Virginia's economic future depends on its ability to attract jobs, people and businesses. The state must compete to draw top companies, grow the job market and offer an exceptional quality of life that makes people want to call Virginia home. That is why the Commonwealth has identified strategies across all transportation modes to ensure people and goods can move freely throughout the state and continue to feed the economy.

Transportation System Considerations

Virginia's freight and passenger rail networks are part of a statewide transportation system that moves people and goods into, out of, within and through the state via highways, water, air and rail. Planning for rail cannot be divorced from consideration of these other modes.

Figure 2-3

AVERAGE TOTAL AADT AND TRUCK PERCENTAGES ALL COUNT SEGMENTS — TOP 30 ROUTES (2005)



Highways. Virginia's major highway transportation corridors are heavily used by passengers and freight, both for local and long distance travel. *Figure 2-3* shows the average annual daily trips and percentage of truck traffic on Virginia's major routes. The single occupant vehicle is the predominant mode of choice for daily commuting (76 percent), followed by carpool (13 percent), public transportation (four percent, including bus and rail) and other (seven percent). This leaves the Northern Virginia, Richmond and Hampton Roads regions struggling with traffic congestion that creates headaches for

commuters and negatively impacts the delivery of goods and services. The vast majority of freight (74.2 percent) is moved by truck, followed by rail (19.9 percent), with air and water cargo making up the rest.

- I-95, the major north-south interstate serving the east coast, slices through Virginia from Washington, D.C. to the North Carolina border. Today the highway is significantly congested in the segment between Washington, DC and the Richmond area.

- ❑ The I-81 corridor, in the western half of the state, runs through the mountains from West Virginia, south to Tennessee. Regularly listed as one of the eight top trucking routes in the U.S., I-81 carries tourists, through travelers, a growing number of commuters and more than a third of all college and university students in Virginia. The entire corridor will be experiencing significant increases in congestion over the next 20 years.
- ❑ I-64 traverses the state from east to west, linking Hampton Roads to the western part of the state and on to West Virginia. It is significantly congested today in the segment between Richmond and Hampton Roads.
- ❑ Route 460 parallels I-64 and serves more of the local communities. However, to avoid the congestion on I-64, more vehicles are using Route 460, especially to access areas of the state south of Richmond.

Figure 2-4

VIRGINIA HIGHWAY AND RAIL MILES

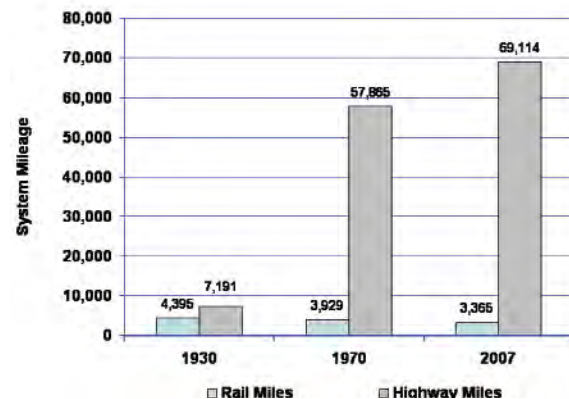
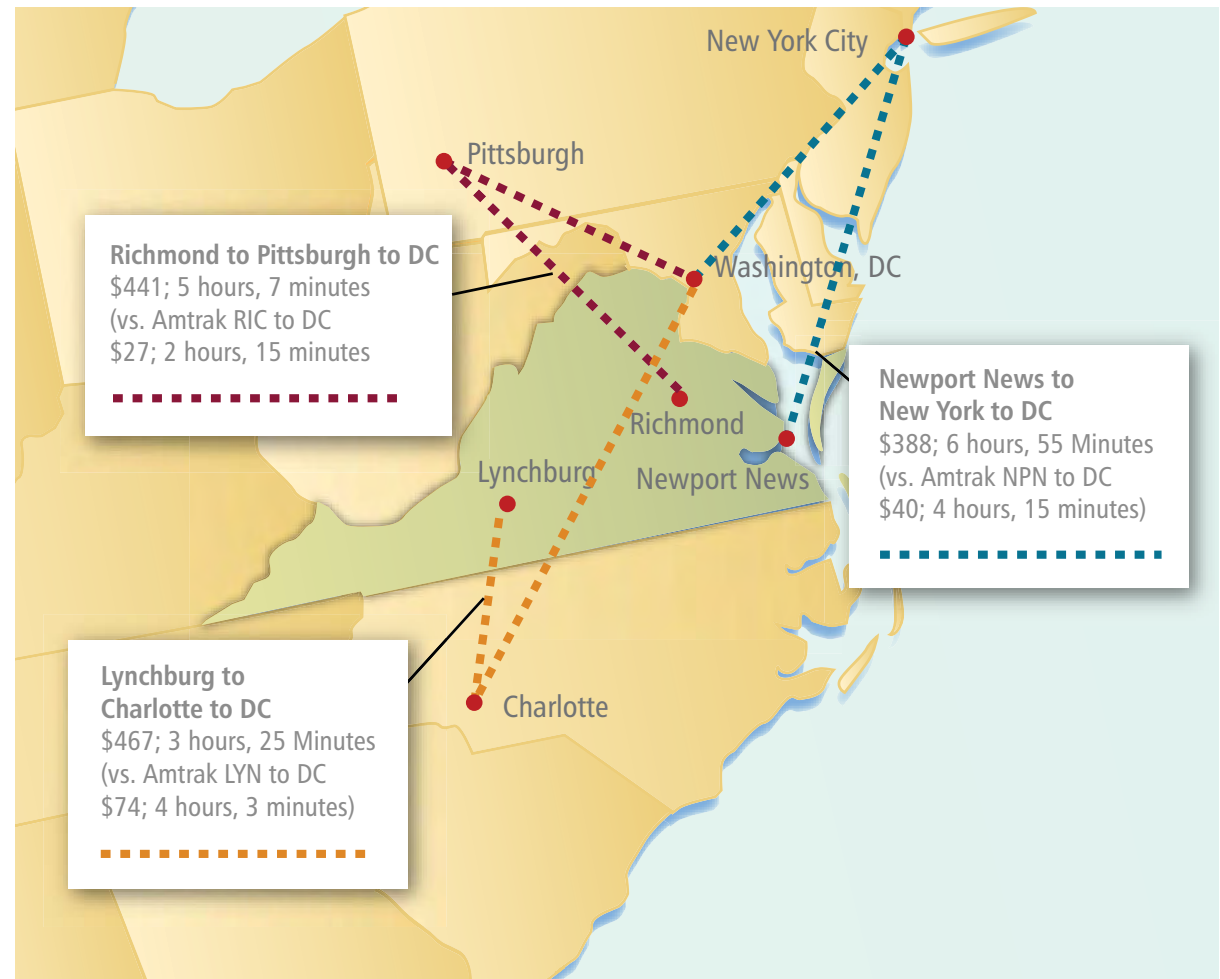


Figure 2-5

SAMPLE TIME AND COSTS FOR AIRLINE TRIPS TO WASHINGTON, DC AND RICHMOND FROM SELECTED VIRGINIA CITIES (JUNE 2008)



- ❑ The I-66 corridor runs from Northern Virginia west to I-81, allowing access to suburban and rural areas west of Washington, DC. Most of this corridor is significantly congested.

Figure 2-4 shows the significant increase in highway miles in Virginia over 77 years while rail miles have actually decreased in that same period.

Aviation. The aviation industry as it relates to passenger travel in the United States is struggling and there is no doubt that fundamental changes are underway that will impact future travel in all modes. In addition to the negative impact that the events of September 11, 2001 had on the airlines, competition and significantly rising fuel costs are forcing them to look for new revenue sources (adding baggage handling charges, for example) in order to keep up with costs. Historically, fuel represented approximately 25 percent of the airline industry costs; today it represents 30-50 percent. Since 2007, the cost of a gallon of airline fuel has increased by approximately 73 percent. In the last two years, 10 airlines have filed for bankruptcy and seven have gone out of business.

Given these issues, it is clear that there will be reduced frequencies of service, increased travel times and increased fares; in some instances air service in certain markets will be eliminated. Enhanced passenger rail service for short- to medium-distance trips of 100 to 500 miles may prove advantageous to air travel moving forward. Amtrak's intercity services — particularly in large markets for trips between major destinations such as Los Angeles to San Diego, Washington, DC to Philadelphia and New York to Philadelphia — already enjoy an air-rail market share greater than 90 percent. Selected corridors within the Commonwealth may prove to be viable markets for air-to-rail diversions, assuming investments are made to improve travel time and reliability. *Figure 2-5* shows some of the aviation routes along with their travel time and cost versus the same trip via Amtrak passenger rail service.

Other than some selected cities, there are few direct flights, so airline travelers must first fly to a hub airport in another state and then return to Virginia by connecting flight.

Ports. The Port of Virginia is the second largest port on the East Coast. The Port has three general cargo marine terminals: Norfolk International Terminal, Portsmouth Marine Terminal and Newport News Marine Terminal. In 2007, the Port handled 2.1 million (five percent) of the nation's 45 million 20-foot equivalent units (TEUs), the standard measure of container terminal capacity.

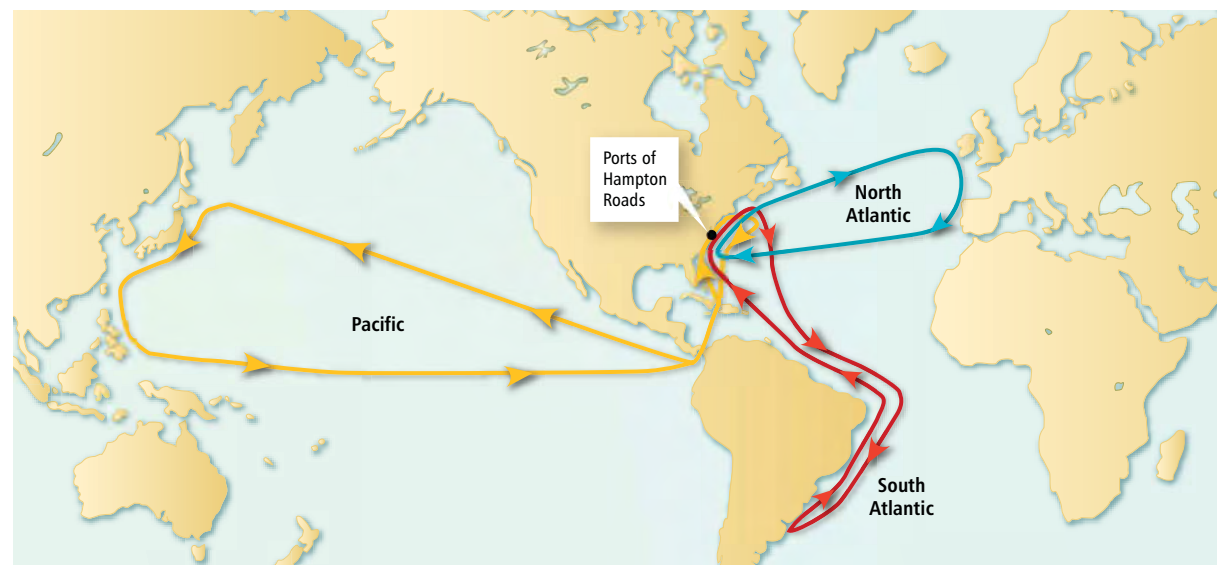
Since its introduction in 1956, loading cargo into standardized boxes — known as containerized cargo

— has revolutionized global shipping and economic development by reducing the cost of transportation between countries of the world. The evolution of transporting containerized cargo into larger and larger specialty containerships has brought economies of scale and the ability of “just-in-time” shipment of goods to companies in the U.S. and around the world.

The new generation of container ships can carry 8,000 to 10,000 TEUs per vessel but are so large that they can only be accommodated by port facilities with deepwater (50-55 foot deep channels) and large specialized container cranes to rapidly load and unload the vessel. Virginia is fortunate with its easy access to the Atlantic sea lanes, deepwater

Figure 2-6

GLOBAL SHIPPING ROUTES WITH THE PORTS OF HAMPTON ROADS



Source: Virginia Port Authority

channels and world class terminals at Norfolk International Terminals operated by the Virginia Port Authority and the recently opened private Maersk APM Terminal in Hampton Roads. Global trade routes for the Ports of Hampton are shown in *Figure 2-6*.

According to the Virginia Port Authority, TEU growth in containerized cargo is expected to increase by 350 percent between 2005 and 2035 (*Figure 2-7*). During the last 10 years (1998-2007), the total volume of container traffic through the Port of Virginia marine terminals has increased at an average annual rate of 5.74 percent. With the scheduled opening of the Heartland Corridor in early 2010, the recent clearance of the CSX double-stack (standardized cargo container boxes stacked two high on rail cars) rail route to Atlanta, GA and the planned addition of a third series of locks in the Panama Canal by 2015, growth is expected to continue.

The use of rail is a significant part of the Port of Virginia's plan to enhance the efficiency and cost effectiveness of shipping. In fact, the Port already moves a higher percentage of containers by rail than any other East Coast port. Rail volume in 2007 increased 20 percent and remains the fastest growing sector of the Port's growth.

Freight

Freight transportation has grown dramatically, fueled by the growth and spread of population and economic activity within the U.S. and the increasing interdependence of economies across the globe brought about by foreign trade. A significant impact

Figure 2-7
INCREASE OF CONTAINERIZED CARGO (TEUS) AT VIRGINIA PORTS

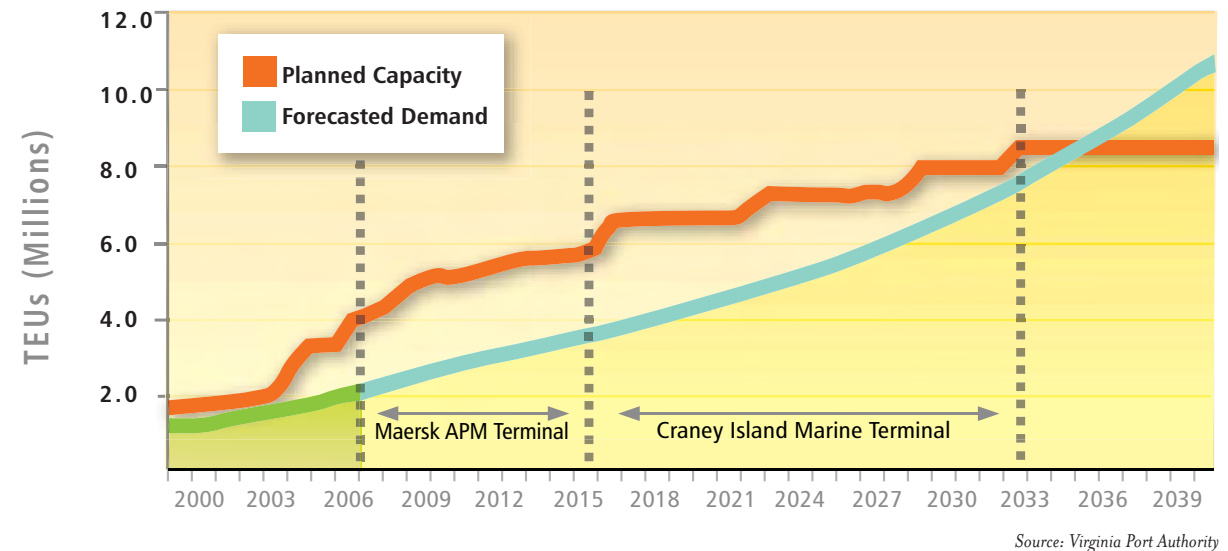
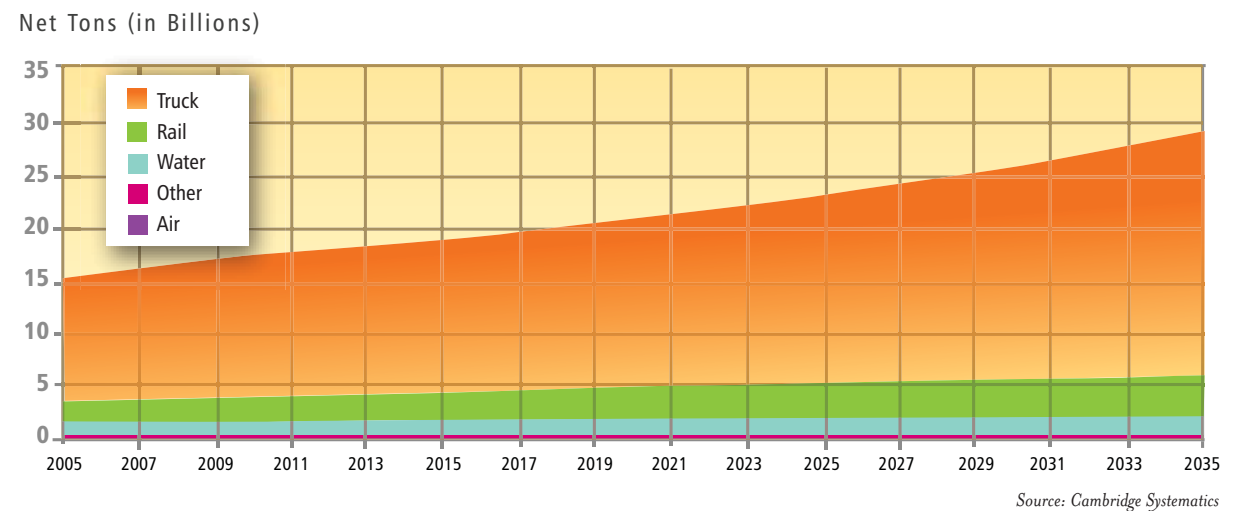


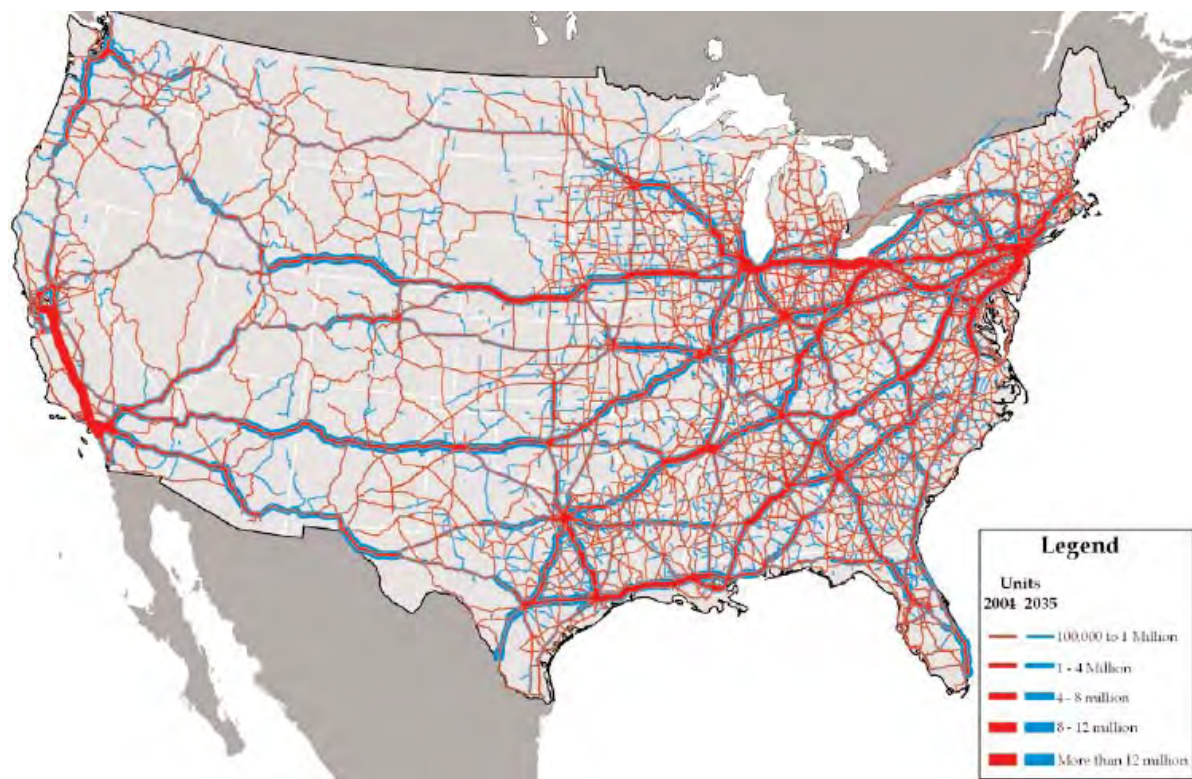
Figure 2-8
U.S. FREIGHT TONNAGE BY MODE 2005 – 2035





Intermodal trains have specially designed railcars that enable containers to be loaded directly from ship to rail.

Figure 2-9
U.S. TRUCK FREIGHT FLOWS 2005 – 2035



Source: Cambridge Systematics

on transportation patterns and economic development has been brought about by the global use of containerized cargo for the shipment of goods by trucks, rail and large specialty container ships calling at major ports. **Figure 2-8** shows the projected growth in cargo by transport modes.

Cargo in the nation is expected to double from 15 billion tons in 2005 to approximately 30 billion tons

in 2035. Although the prediction shows the vast majority of freight being handled by trucks, highway congestion and the increasing cost of fuel make an increase in the percentage of modal shift between the truck and rail a necessity. **Figure 2-9** indicates the projected growth patterns in truck flows between 2005 and 2035 and **Figure 2-10** indicates the projected growth patterns in rail flows in the same period. As seen in **Figure 2-9**, the I-95, I-81

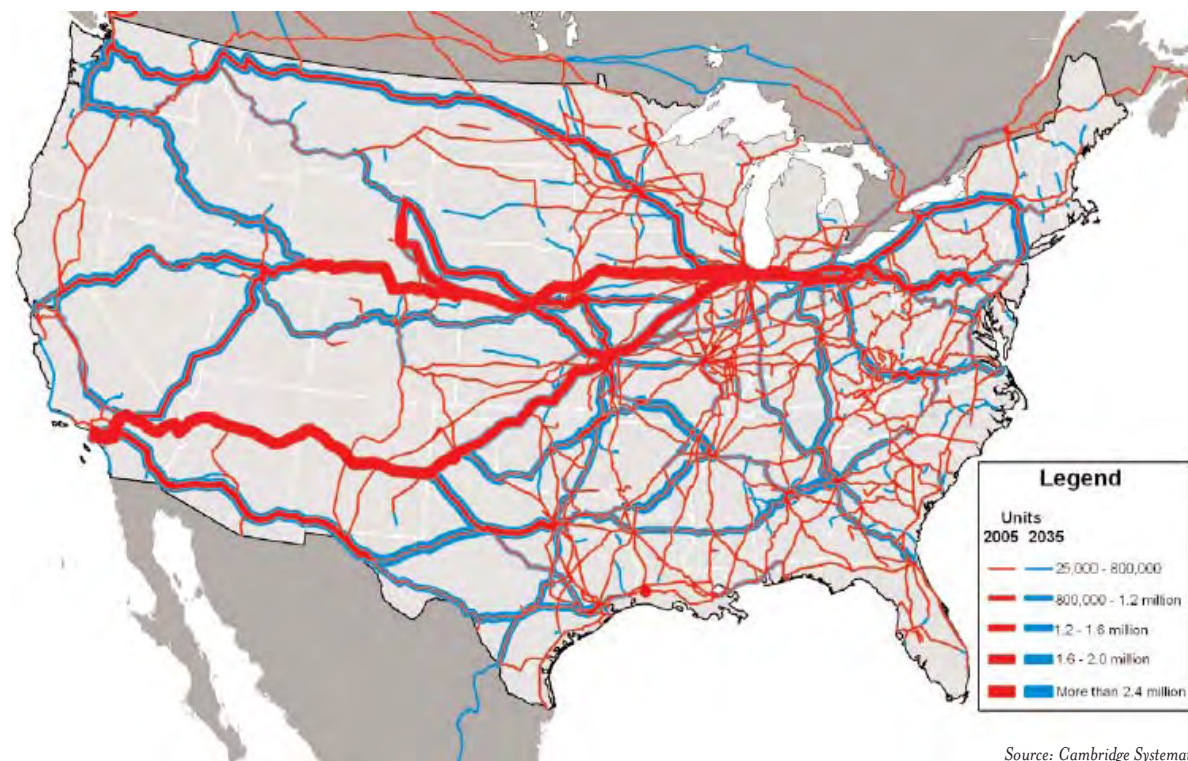
and I-64 highways between Richmond and Hampton Roads will carry an increasing number of trucks in future years.

Figures 2-11 and **2-12** show the current and projected 2035 rail volumes compared to current rail capacity. Note that the statewide multimodal freight study indicated that the I-95 corridor is expected to be significantly impacted. Therefore, the CSX National Gateway project incorporated in the statewide rail plan projects a greater modal shift from highway to rail, reflecting the goals of this rail plan.

A detailed evaluation of freight movements in Virginia was recently completed as part of the VTrans2035 plan currently being developed. According to this study, the movement of freight – raw materials, intermediate products and finished goods – currently supports over \$350 billion of Virginia’s Gross State Product annually. To accommodate the movement of freight, Virginia hosts one of the nation’s leading seaports, two national freight railroads, numerous local and regional railroads, four major cargo airports and some of the nation’s most heavily used truck corridors.

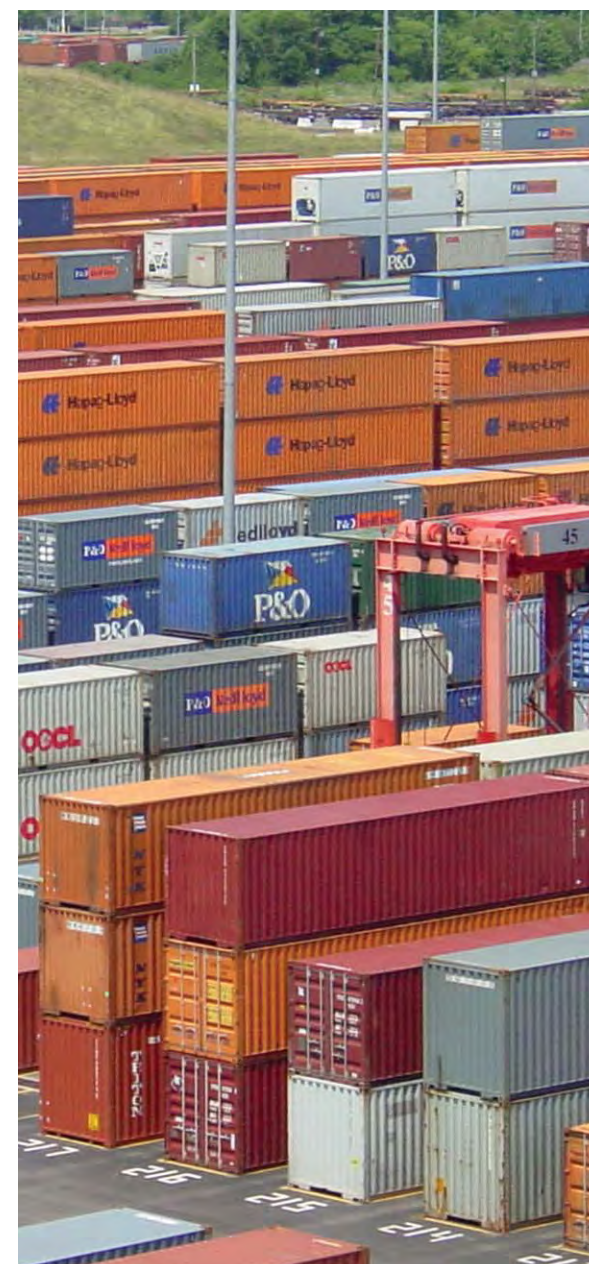
Over the next two decades, the forecast is for significant growth in the demand for freight movement into, out of, within and through Virginia. Some of the Commonwealth’s freight infrastructure is well positioned to accommodate this growth. But much of its infrastructure will be challenged – from normal wear and tear; from growth in the amount,

Figure 2-10
U.S. RAIL FREIGHT FLOWS 2005 – 2035



type and location of freight movement; from increased passenger traffic over shared highway and rail corridors; and from environmental pressures associated with higher freight volumes and/or denser settlement patterns in and around major freight facilities and corridors. Almost 80 percent of Virginia's freight tonnage has an origin or a destination in another state – including 40 percent which is simply passing through Virginia on its way to and from other states – so growth and freight improvements in other states, or the lack thereof,

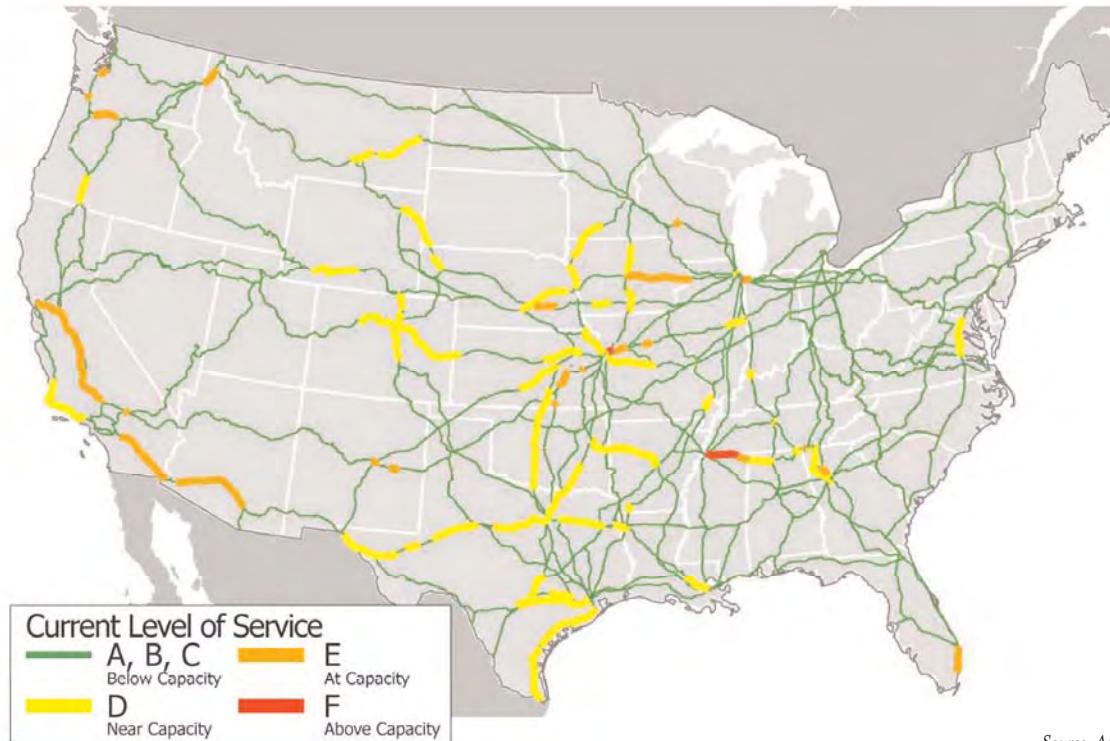
could significantly affect conditions in Virginia. Today, approximately 50 percent of Virginia's total output, 28 percent of its gross state product and 34 percent of its employment are from freight-related industries that depend heavily on the movement of raw materials, intermediate goods and/or finished products. The movement of existing freight tonnage by mode and direction is shown in *Figure 2-13*. A projection of the increase in tonnage associated with each mode to 2035 is shown in *Figure 2-14*.



Containers at the Port of Virginia are sorted and classified for shipment.

Figure 2-11

RAIL CURRENT VOLUMES COMPARED TO CURRENT CAPACITY



Source: AASHTO

Passenger Rail

For nearly two centuries, railroads have been part of this country's heritage and history. Trains enabled the development of our major inland cities, the settlement of our rural areas and the opening of the West for expansion. However, trains are not just part of our past, they are a significant part of our present and a critical part of our future for effective passenger and freight rail movements, particularly as energy costs and fuel prices continue to rise.

- On a local level, passenger rail is a proven engine of economic development and growth. Studies show that when passenger rail service is introduced into a community, retail establishments flourish, commercial and residential property values increase and people enjoy the transportation choices they are able to make in their daily lives.
- On a regional level, passenger trains can provide cost-effective and convenient intermodal connections between communities and other modal choices, such as bus, trolley, light rail, bicycle, airport and park-and-ride facilities and expand economic development opportunities.
- On a national level, passenger trains provide an economic means of expanding capacity, transportation options and connectivity, mobility for underserved populations, congestion mitigation, local air quality attainment improvements and jobs — not just in the railroad industry but also in secondary support industries — which enable and stimulate economic development activity.

Coal

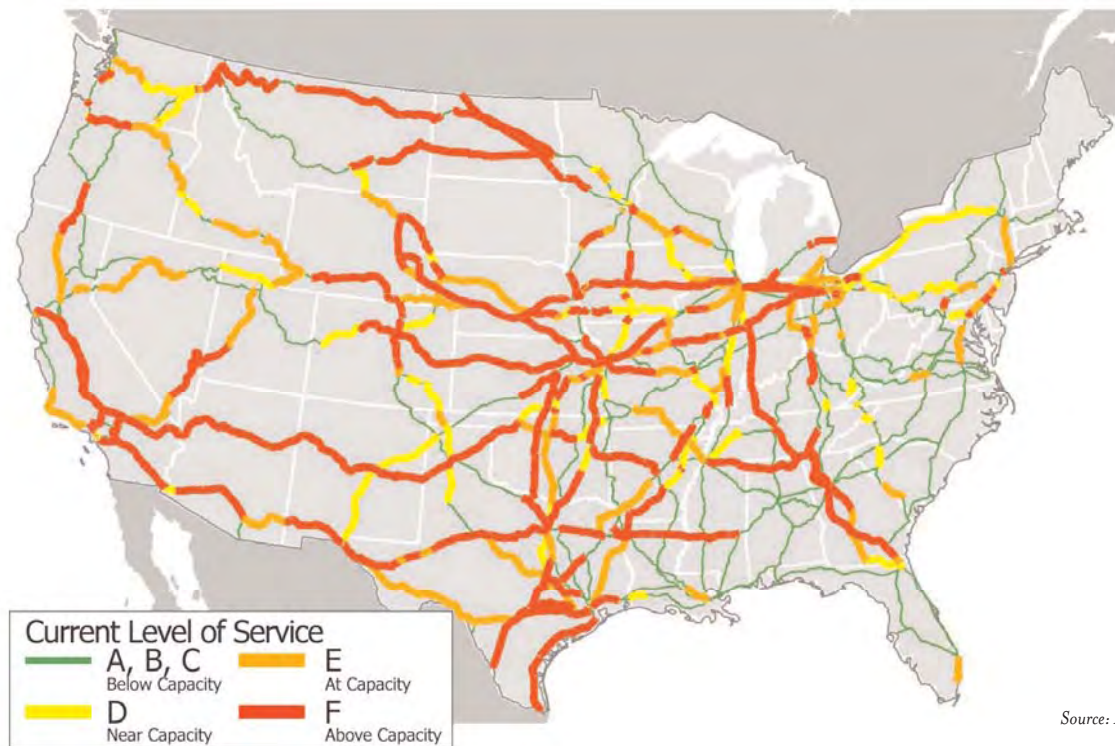
Rail is the major mode of transportation for the movement of coal from mines to domestic industries or for export. After a period of relatively low coal exports, recent years have seen a rapid growth in coal exports due to increased global demand for coal for electricity generation, spurred by soaring petroleum costs. Historical coal movements through Hampton Roads terminals are shown in *Figure 2-15*. The first quarter of 2008 saw a 62 percent increase over the same period in 2007. This increased demand requires

a corresponding increase in the number of freight trains needed to transfer the cargo.

According to the most recent data from the Association of American Railroads (2005), the largest commodity carried by tonnage was coal (59 percent). A significant portion of the freight tonnage impacting the state rail system is coal from the Appalachian coalfields in Southwest Virginia to Norfolk Southern and CSX marine terminals in Hampton Roads for export.

Figure 2-12

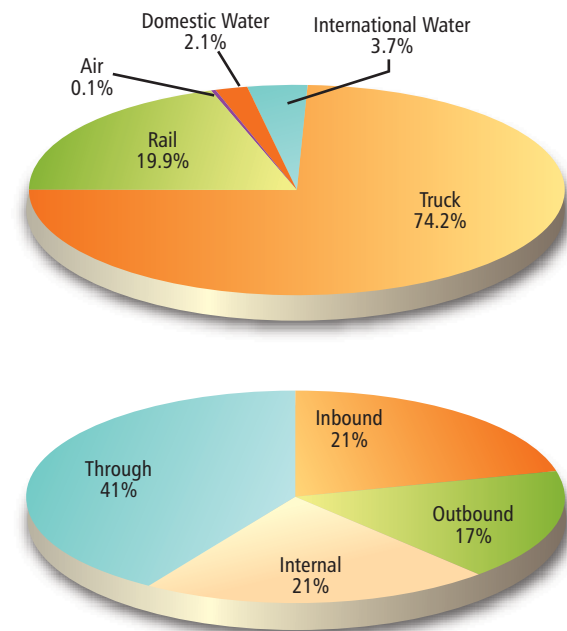
RAIL FUTURE VOLUMES IN 2035 COMPARED TO UNIMPROVED CAPACITY



Source: AASHTO

Figure 2-13

VIRGINIA FREIGHT TONNAGE BY MODE AND DIRECTION



Source: Cambridge Systematics

On a global level, passenger rail conserves energy, helps reduce greenhouse gas emissions, reduces airborne particulate and toxic emissions and provides an environmentally benign land use alternative to the impermeable asphalt surfaces that contribute to the pollution of our waterways.

There are currently two passenger railroads operating in Virginia on approximately 616 miles of track owned primarily by Norfolk Southern and CSX.

Collectively, these two passenger railroads, Amtrak and VRE, carried nearly 5.4 million passengers in and through Virginia during 2007. Since 2003, there has been a steady increase in Amtrak Virginia ridership, averaging about five percent per year. VRE (Figure 2-16), which provides service to Washington, DC from the Northern Virginia suburbs, has experienced explosive growth. Ridership increases have averaged 16 percent per year and are expected to double in the next 20 years. Both VRE and Amtrak have been and

will be challenged by capacity constraints as a result of increased freight rail operations and other capital needs related to equipment and station facilities.

Metrorail and light rail are not considered to be part of the rail system since they rarely operate in railroad right-of-way and these modes are under the jurisdiction of the Federal Transit Administration.

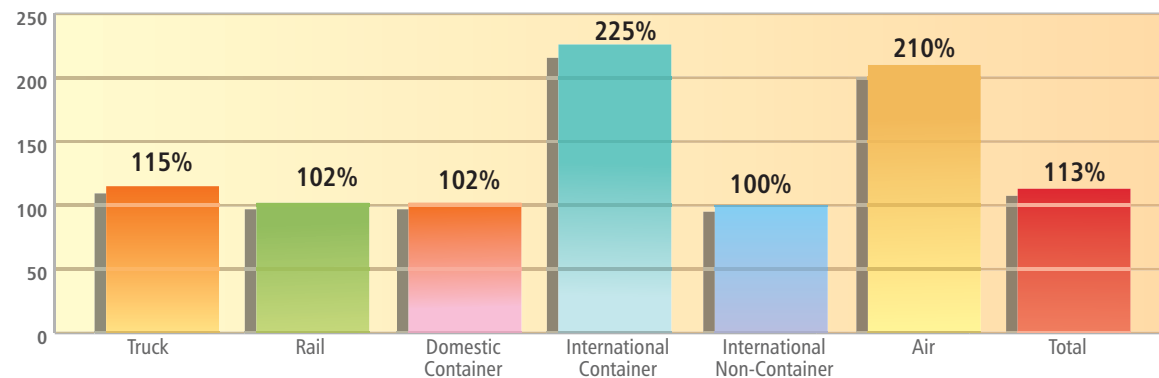
Land Use, Natural Resources and Environmental Influences

The nation is in the early stages of a major change in transportation, the economy and, ultimately, quality of life. There is global competition for finite resources of oil and coal. Crude oil prices averaged \$72.00 per barrel in 2007. In late June 2008, the price for crude oil rose to approximately \$135.00 per barrel – an increase of 88 percent. China and India are making significant investments in infrastructure and are emerging as strong competitors in the global economy. India's middle class population alone is equal to the total population of the United States. It has become imperative to become a more energy efficient nation and reduce greenhouse gases.

According to the Association of American Railroads, greater use of freight and passenger rail offers a

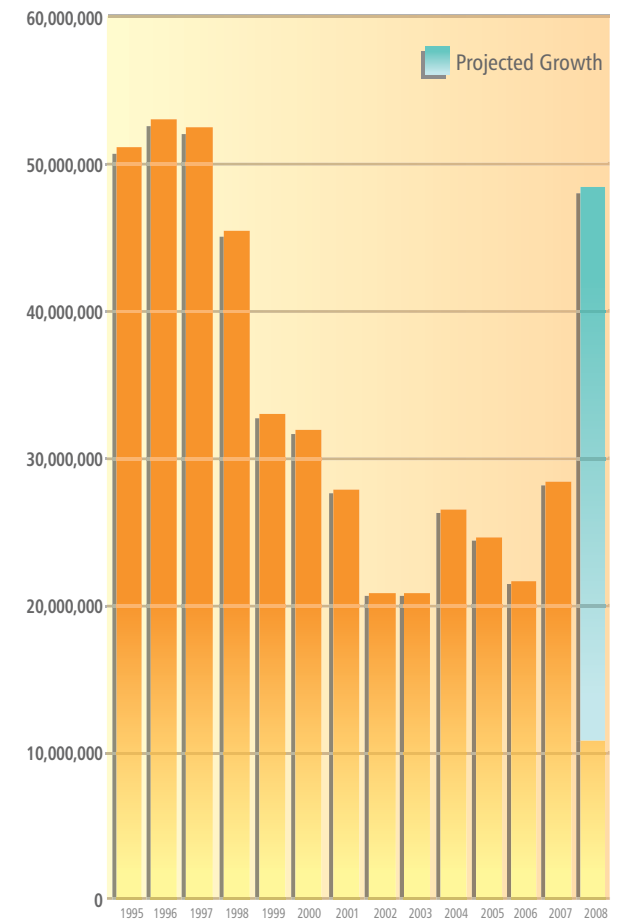
simple and relatively immediate way to reduce greenhouse gas emissions without adverse impacts on the economy. As *Figure 2-17* shows, the fuel efficiency of commuter rail is 27 percent greater than the automobile for passenger travel and Class I railroads are 90 percent more efficient than truck for freight movement. Railroads are typically three or more times more fuel efficient than trucks and railroads have a smaller carbon footprint. Every ton-mile of freight that moves by rail instead of truck reduces greenhouse emissions by at least 67 percent. Based on Federal Environmental Protection Agency (EPA) data, freight railroads account for 2.6 percent of the nation's greenhouse gas emissions from transportation sources and just 0.7 percent from all sources. Based on data from the American Association of State Highway and Transportation Officials (AASHTO), diverting to rail just one percent of long-haul freight that currently moves by truck

Figure 2-14
VIRGINIA FREIGHT PROJECTIONS BY MODE (2035)



Source: Cambridge Systematics

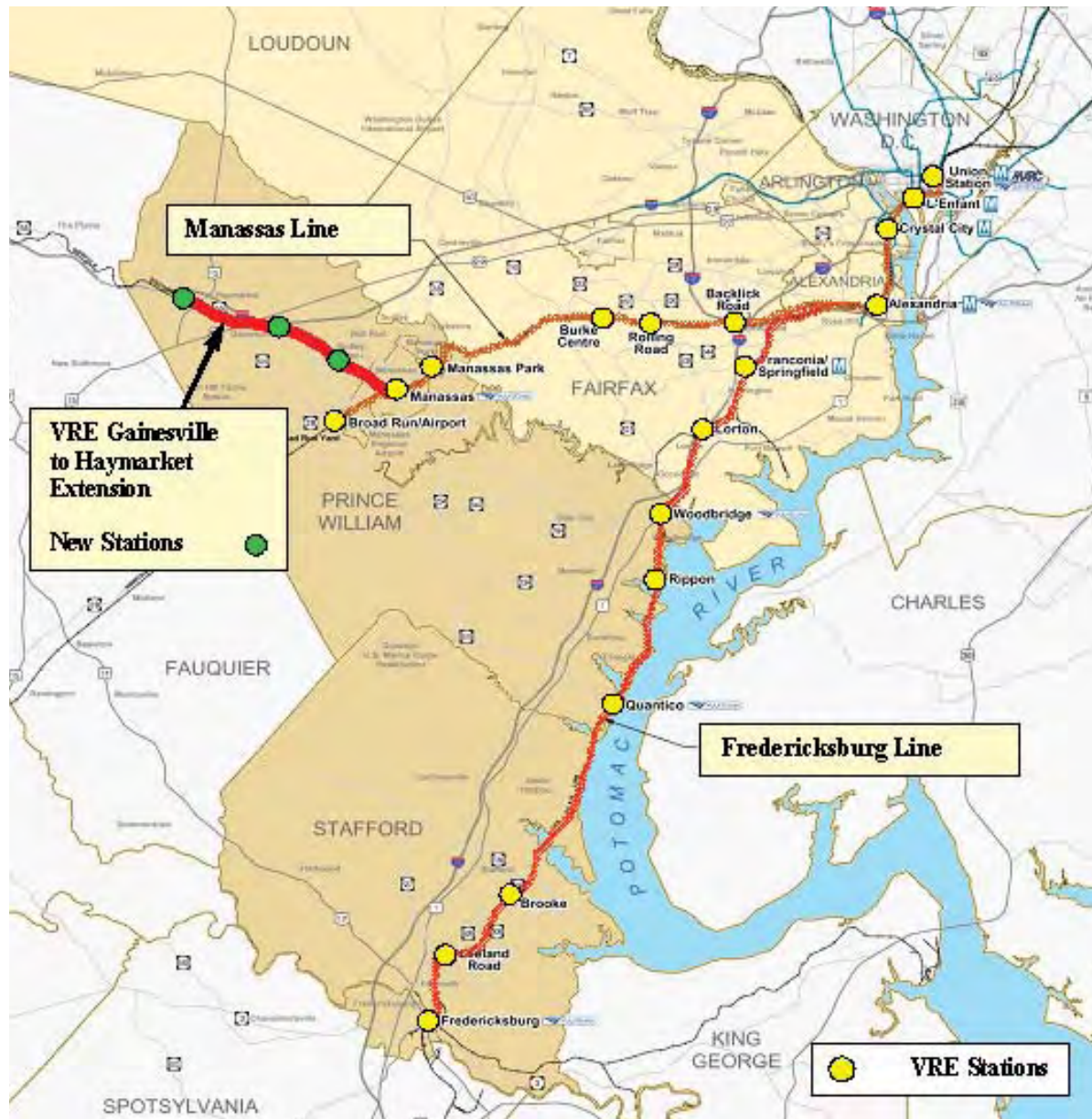
Figure 2-15
COAL SHIPMENTS 1995 - 2008



Source: Virginia Maritime Association

would result in annual fuel savings of 110 million gallons and annual greenhouse gas emissions would fall by approximately 1.2 million tons.

Figure 2-16
VRE SYSTEM MAP



Source: VRE



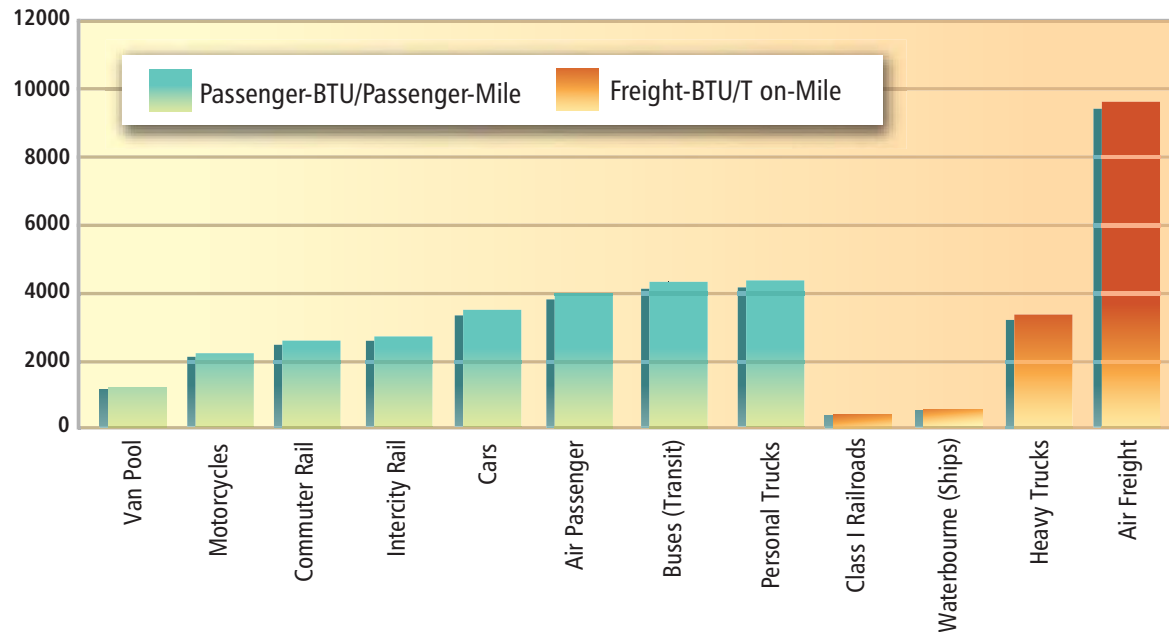
Train travel is 17 percent more energy efficient than domestic airline travel and 21 percent more efficient than traveling by car.

Railroads are the most fuel efficient mode of ground transportation. In 2007, freight railroads moved a ton of cargo an average of 436 miles per gallon of fuel. According to the Association of American Railroads, railroad fuel efficiency has risen 85 percent between 1980 and 2007, due to new locomotive technologies, advanced research and development innovative operating practices, employee training and diligence in complying with environmental laws and regulations. In 2007, Class I railroads used 3.5 billion fewer gallons of fuel and emitted 39 million fewer tons of carbon dioxide than they would have if their fuel efficiency and operating procedures had remained at 1980 levels.

Along with the environmental impact, transportation planning must consider land use and natural resources. While the purpose of Virginia's transportation system is to link regions and service communities by moving people and goods

Figure 2-17

FUEL EFFICIENCY IN TRANSPORTATION



Source: U.S. Department of Energy

throughout the state, infrastructure construction must not come at the expense of Virginia's vast natural and cultural resources. Virginians have communicated that they do not want to sacrifice the environment or quality of life for transportation improvements. Virginia's transportation agencies are dedicated to designing and operating a system that seamlessly integrates into communities while protecting the assets of every community throughout the Commonwealth. Passenger rail stations and freight rail intermodal facilities serve as anchors for more dense development which supports more efficient travel and reduced land use.

Improvements in the rail system offer many benefits:

- The diversion of auto and truck traffic to rail could improve public safety and air quality by reducing congestion and greenhouse emissions, which affect climate change and health.
- The diversion of air travel passengers to passenger rail could reduce congestion occurring in the nation's airport system and provide a cost-effective and timely alternative for intercity travelers.

- Improved passenger and freight rail service could help reduce the negative impacts to individuals and the economy of short or prolonged energy supply disruptions and/or energy price increases.
- Land use and travel pattern changes for both passenger and freight movements could improve air quality, water quality and aesthetic appeal.
- Rail improvements could provide mobility and economic development opportunities to smaller communities and rural areas with limited access to passenger or freight transportation.
- The availability of an improved rail system could ensure a redundant transportation mode for use in emergency situations involving natural disasters, terrorist attacks and military response and readiness for war time situations.
- Passenger rail could provide a mobility option for individuals who cannot or choose not to drive or fly.
- Freight rail could provide an option to companies who cannot or choose not to use trucks and the highway system for the transport of cargo.

Chapter 3

Overview of the Virginia Rail System

The year 2007 marked the 400th anniversary of Virginia and freight and passenger movement remains a critical part of the Commonwealth's economy today. Factors that impact the state's rail system are:

- Fourteen different railroads coordinate passenger and freight service over 3,200 miles of private track, most of which is operated by the state's two Class I railroads – Norfolk Southern and CSX.
- Much of the rail system is single track, creating natural bottlenecks in high traffic areas.
- The largest commodity (by tonnage) carried by rail is coal (59 percent). The increased global appetite for coal that is shipped from Virginia ports is placing greater demand on Virginia's east-west rail corridors.
- Shortlines often provide the critical first or last link in the business-to-business delivery of goods or materials by providing the intensive switching operations that are not profitable for the Class I

railroads. Years of deferred maintenance and the trend toward the use of newer and heavier 286,000 pound railcars have created a need to invest in shortline infrastructure.

- Both Amtrak and VRE use Norfolk Southern and CSX owned tracks. Given the increases in freight demand and the desire to expand passenger rail, Amtrak, VRE and the railroads will need to collaborate to share costs and benefits of improvements.
- VRE is already at capacity and ridership is expected to double in the next 20 years.

These factors have been considered in the development of the Statewide Rail Plan. They are described in more detail in this chapter.

Virginia's rail system dates from the 1800's and has been evolving continuously since then. Today, it consists of more than 3,200 miles of private track (excluding trackage rights), most of which are

operated by two Class I railroads – the Norfolk Southern Corporation (2,020 miles) and CSX (850 miles). Major rail lines run north-south and east-west and converge at key nodes: Norfolk, Richmond, Lynchburg, Roanoke and Alexandria. *Figure 3-1* is the State Rail Map with the various freight and passenger lines noted.

Twelve freight railroads (shown in *Figure 3-2*) and two passenger railroads operate the Commonwealth's rail system. Two are Class I national railroads (defined as line-haul freight railroads exceeding \$319.3 million in annual operating revenue). The remaining 10 freight railroads are Class III (shortline) railroads (defined as line-haul carriers with annual revenues less than \$25 million). Two of these are primarily switching railroads serving marine terminals and industrial facilities. There are no Class II Railroads in Virginia. Two passenger systems – Amtrak and VRE – utilize this private track freight railroad system.

Figure 3-1
EXISTING STATE RAIL MAP (2007)



Much of the rail system is single track. Single track railroads are natural bottlenecks, operating like a one-lane highway that must accommodate two-way traffic. Just as cars would need to stop and take turns proceeding on a stretch of single-lane road, trains must stop to allow other trains to pass. This type of operation requires careful dispatching procedures for safety reasons and can cause significant capacity constraints and on-time performance delays.

Virginia Rail Tonnage*

The *Virginia Statewide Multimodal Freight Study, Phase I*, utilized a national freight database known as TRANSEARCH, which included a set of rail network flow maps, based on model assignments and freight data from 2004. Review of TRANSEARCH rail flow reveals that:

- :: For existing Virginia-based tonnage (moving inbound, outbound or within the Commonwealth), the highest volume flows are east-west and focused on the Ports of Hampton Roads. Coal represents a large share of current rail tonnage in this corridor, as well as intermodal movements on the Heartland Corridor. The north-south movement of Virginia rail traffic is a lesser share of rail business. (*Figure 3-3*).
- :: Rail tonnage that has both an origin and a destination outside of Virginia and passes through Virginia mirrors that of trucking. As

* Rail freight data discussed in this report was obtained primarily from the *Virginia Statewide Multimodal Freight Study, Phase I, Final Report, April 2008*.

shown in *Figure 3-4*, pass-through traffic is primarily utilizing the north-south network. North-south rail movements should increase significantly as major rail chokepoints on the I-95 (CSX National Gateway) and I-81 (Norfolk Southern Crescent Corridor) are removed and system improvements are completed in Virginia and adjacent states.

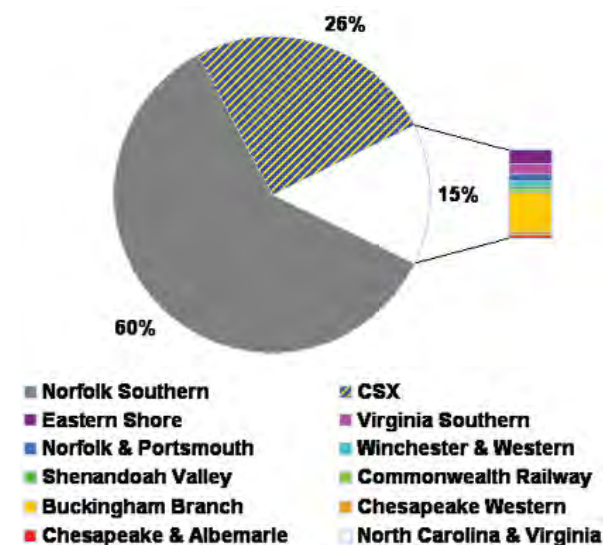
According to the most recent data from the Association of American Railroads (2005), there were a total of 2,426,523 carloads of freight carried in Virginia with a total tonnage of 178,423,334 tons. The largest commodity carried by tonnage was coal (59 percent). According to the most recent data available from the USDOT (2004), Virginia's multimodal transportation system handled around 915 million tons of freight worth more than \$2.1 trillion. This includes freight carried by trucking, rail, air, domestic water and international water. It also includes freight moving inbound to, outbound from, within and through the Commonwealth. On the basis of tonnage, trucking handled approximately 74 percent, followed by rail at 20 percent (183 million tons), water at 14 percent and air at less than one percent. On the basis of value, trucking handled approximately 94 percent, rail handled approximately four percent and air and water handled approximately two percent.

Rail Types and Services

Virginia's rail freight traffic is generally one of three types (*Figure 3-5*):

Figure 3-2

VIRGINIA'S CURRENT RAIL SYSTEM PRIVATELY-OWNED BY FREIGHT RAILROADS



- :: Unit Trains (long trains of 7,500 to 10,000 feet consisting of a single commodity, often coal). Coal trains most often move east-west, between the coalfields of Appalachia and Hampton Roads or between the coalfields and Tennessee/North Carolina. About half of the coal moving over Virginia's rail system is through traffic, traveling to a non-Virginia destination.
- :: General Merchandise Trains (carload trains of varying lengths, consisting of different car types, such as tank cars, hopper cars, flatcars or traditional boxcars). Carloads carry varied commodities (agricultural products, chemicals,

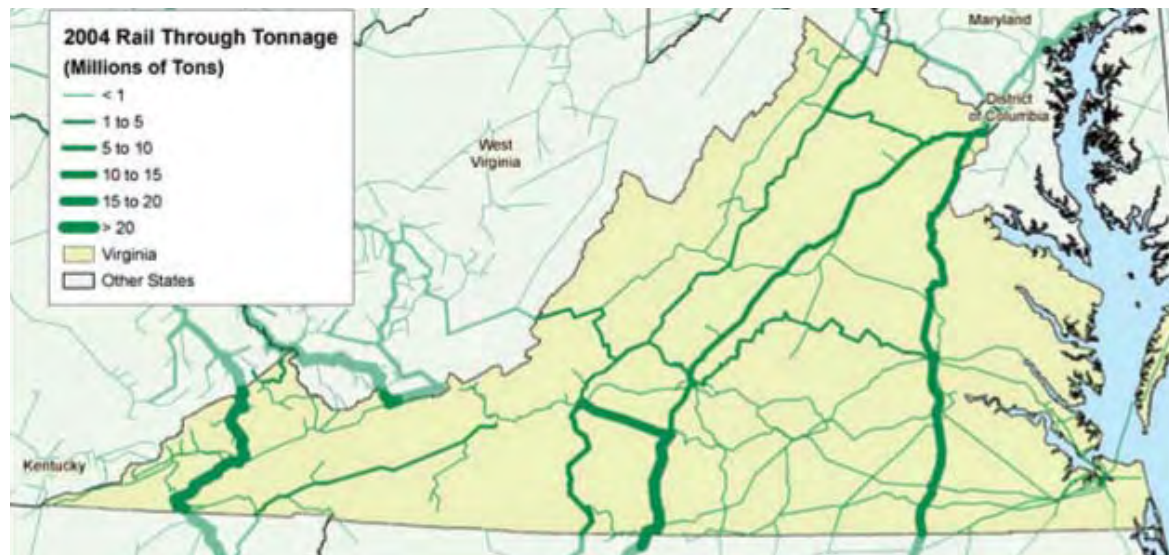
Figure 3-3

VIRGINIA RAIL TONNAGE - INBOUND, OUTBOUND AND INTERNAL (2004)



Figure 3-4

RAIL TONNAGE PASSING THROUGH VIRGINIA (2004)

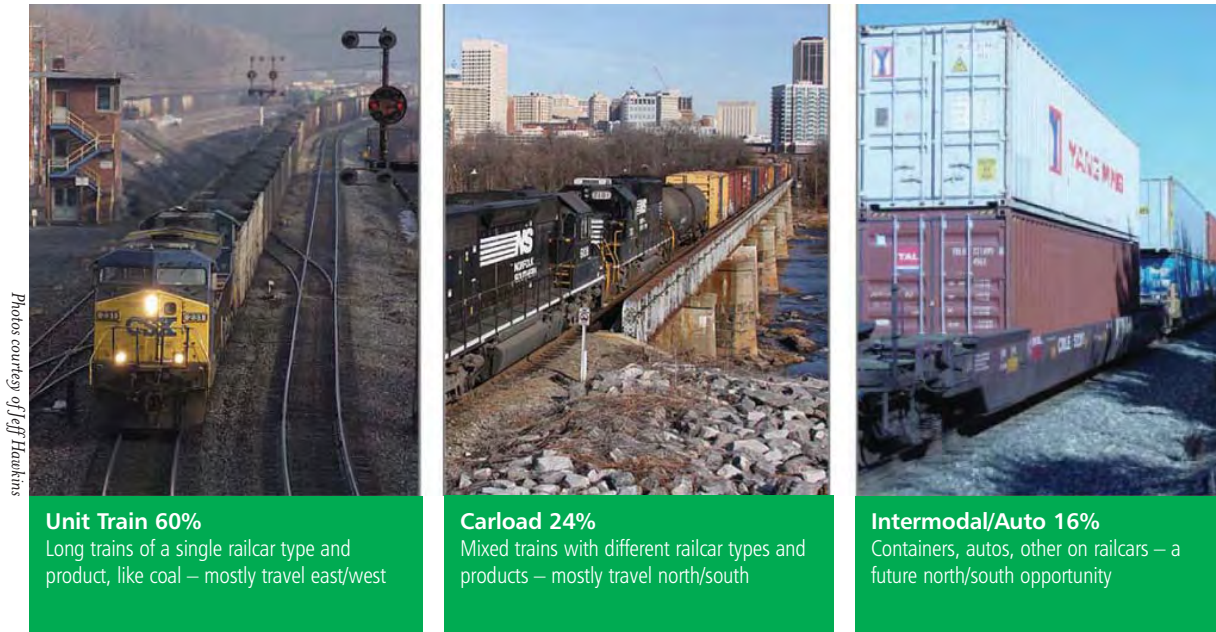


paper, lumber, food, etc.) and represent more than 25 percent of Virginia tonnage. They move primarily in the north-south direction, paralleling I-95 and I-81. Like coal, about half of this is through traffic.

- **Intermodal/Auto Trains** (long trains of 6,000 to 13,000 feet consisting of specialized railcars designed to carry intermodal shipping containers or automobiles). Intermodal containers represent approximately 19 percent of Virginia's rail freight traffic on a per-unit basis but only three percent on a per-ton basis because containers tend to carry lower weight, higher value commodities. Intermodal traffic moves both north-south and east-west over Virginia's rail network. Around one-half is moving between Virginia origins and destinations (Virginia Port Authority facilities and other intermodal terminals) and Illinois, where it may interchange with the western Class I carriers. The remainder consists mostly of through traffic in the Florida-New Jersey and Illinois-North Carolina corridors.

The movement of general merchandise and intermodal trains has been significantly improved as a result of double-stack technology. In 1984, container trains began using specially engineered rail cars that could carry two tiers of containers instead of one, significantly reducing the locomotive power, track capacity and train crews required to move trains. The implementation of this technology is largely dependent on the railroad being able to sufficiently raise the height of tunnels, bridges and other structures to allow double-stack trains to operate. The Heartland Corridor Initiative between Norfolk

Figure 3-5
PERCENT OF FREIGHT RAIL TONNAGE (2005)



Southern, the federal government and the states of Ohio, West Virginia and Virginia represented a major initiative to support freight rail movement through improvements to support double stack operations. The Heartland Corridor project doubles freight capacity along Route 460 through Virginia and significantly improves freight shipping time between the Ports of Hampton Roads and markets in the Midwest.

Class I Railroads (Norfolk Southern and CSX)

The two main Class I railroads operating in Virginia are Norfolk Southern and CSX Transportation. Norfolk Southern's corporate headquarters is located

in Norfolk. **Figure 3-6** depicts the Norfolk Southern and CSX freight lines in Virginia. Interconnectivity of the overall system is shown in **Figure 3-7**, with system maps for Norfolk Southern and CSX shown in **Figures 3-8** and **3-9** respectively. The vast majority of Virginia's freight rail track infrastructure is in the possession of the two Class I railroads, Norfolk Southern (approximately 60 percent) and CSX (approximately 30 percent), with the remaining 10 percent being carried by the shortline railroads.

Virginia's freight rail network is comprised of tracks, bridges, sidings and terminals. Both freight railroads offer major east-west connections between

Hampton Roads and West Virginia/Kentucky/Tennessee and north-south connections along the I-95 and I-81 corridors to adjacent states and national regions. The majority of Virginia's freight rail network within the national network runs roughly north-south, while the major lines carrying Virginia tonnage run east-west.

Norfolk Southern

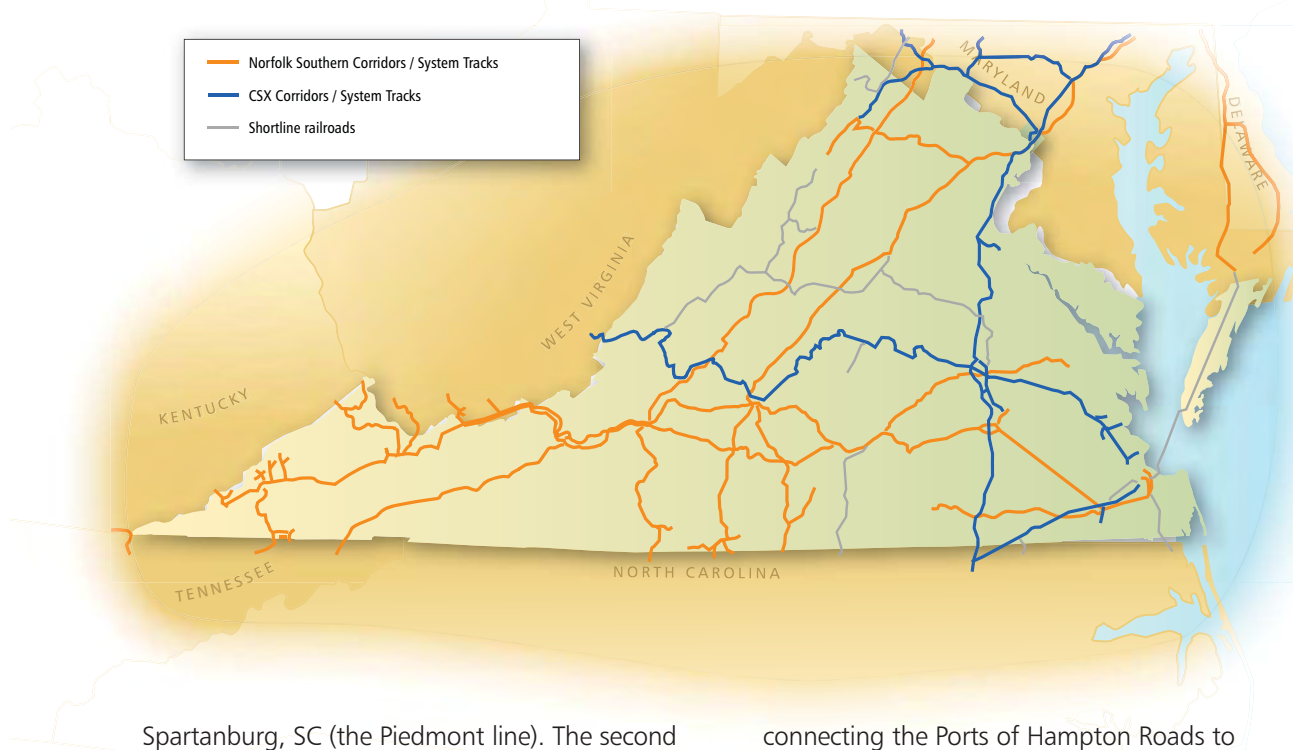
According to the company's profile, Norfolk Southern Corporation is a Norfolk, VA-based company that controls a major freight railroad, Norfolk Southern Railway Company. The railway operates approximately 21,000 route miles in 22 eastern states and Washington, DC, serves all major eastern ports and connects with rail partners in the West and Canada, linking customers to markets around the world. Norfolk Southern provides comprehensive logistics services and offers the most extensive intermodal network in the East. In 2007, the principal operating revenue sources were: coal, coke and iron ore (25 percent); intermodal containers (21 percent); metals and construction (12 percent); chemicals (12 percent); agricultural, consumer products and government (11 percent); automotive (10 percent); and paper, clay and forest products (nine percent). In 2007, rail revenue ton miles equaled \$196 billion; and rail shipments (including containers and trailers) equaled approximately 7.6 million rail carloads.

Norfolk Southern's routes are:

- **The Crescent Corridor.** These are the north-south mainlines in Virginia. One segment runs from Alexandria to Danville and then south to Atlanta, GA via Greensboro and Charlotte, NC and

Figure 3-6

CLASS I RAILROADS IN VIRGINIA (NORFOLK SOUTHERN AND CSX)



Spartanburg, SC (the Piedmont line). The second mainline segment parallels I-81 between Front Royal and Bristol, VA (the Shenandoah line) and serves the Commonwealth's Virginia Inland Port (VIP) near Front Royal. The principal train types on the Crescent Corridor are intermodal, general merchandise and auto trains.

- **The Heartland Corridor.** This heavily used line runs from the Ports of Hampton Roads to the West Virginia border in Southwest Virginia and then to Midwest markets in Ohio, Illinois and other states. The Heartland Corridor is Norfolk Southern's primary intermodal train system

connecting the Ports of Hampton Roads to national markets and is currently being improved in order to handle heavier double-stack intermodal trains.

- **The Coal Corridor.** This is the line with the heaviest use, carrying unit trains of coal from the Appalachian coalfields to the Norfolk Southern Coal Marine Terminal at Lamberts Point in Norfolk. The Coal Corridor is a dual line section consisting of the former Virginia Line and the Norfolk and Western Line from the coalfields to Abilene, VA, where both lines merge to continue eastward to Norfolk.

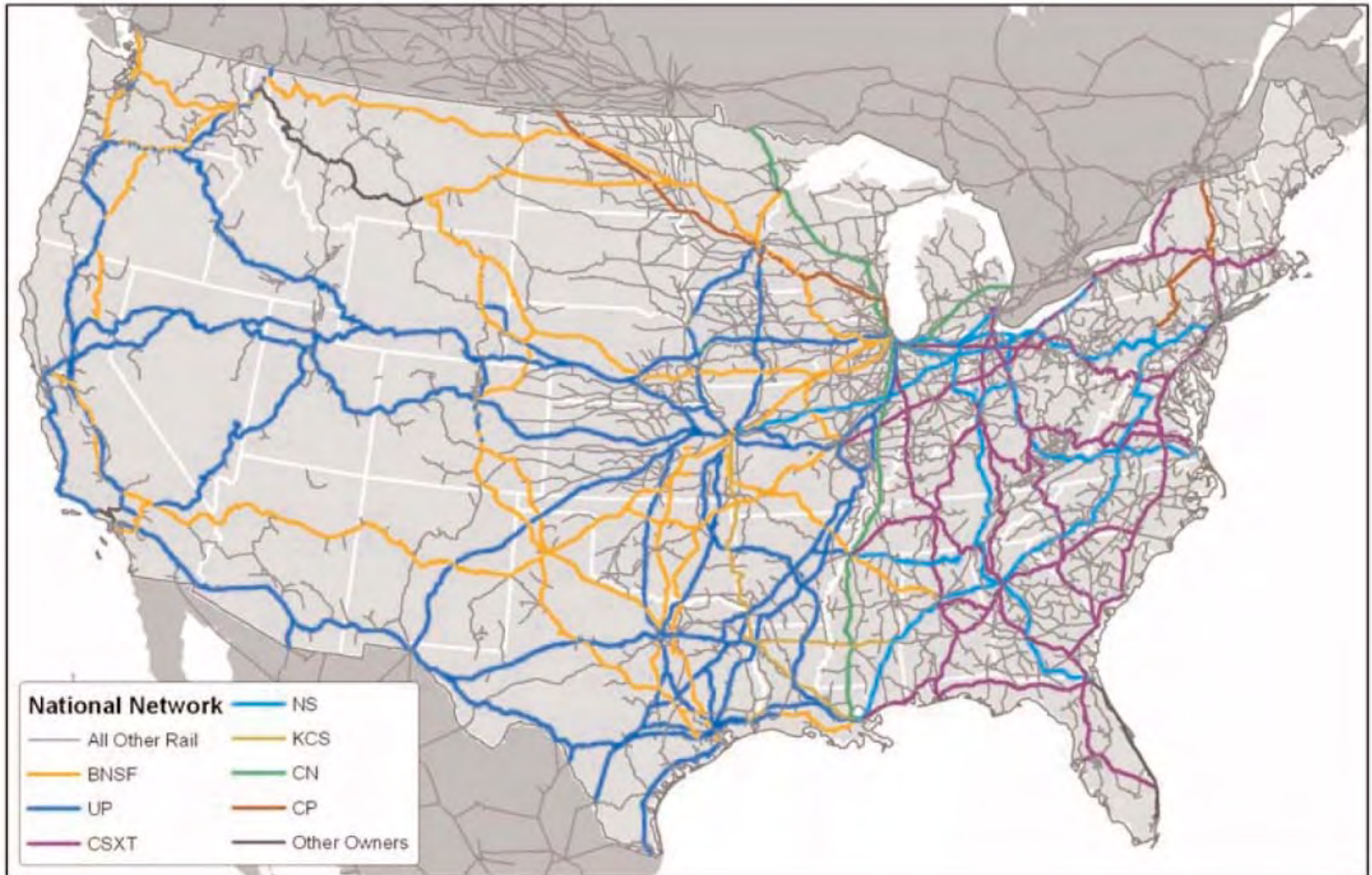
CSX Transportation

According to the Company's profile, CSX Corporation, based in Jacksonville, FL, owns companies providing rail, intermodal and rail-to-truck transload services that are among the nation's leading transportation companies, connecting more than 70 river, ocean and lake ports, as well as more than 200 shortline railroads. Its principal operating company, CSX Transportation Inc., operates one of the largest railroads in the eastern U.S. with a 21,000-mile rail network linking commercial markets in 23 states, Washington, DC and two Canadian provinces. In 2007, the principal operating revenue sources were: merchandise containers/trailers (58 percent); coal, coke and iron ore (30 percent); automotive (10 percent); and other miscellaneous freight (two percent).

CSX's routes are:

- **The National Gateway Corridor.** This north-south mainline runs from Alexandria to Richmond, then continues further south via Petersburg and Emporia, generally paralleling I-95. At Weldon, NC just below the Virginia-North Carolina border, the mainline has an eastward extension to the Ports of Hampton Roads. The National Gateway Corridor is CSX's primary intermodal train system connecting the Ports of Hampton Roads to national markets and is currently being improved to handle double-stack intermodal trains.
- **The Coal Corridor.** One of the most heavily used CSX lines carries unit trains of coal from the Appalachian coalfields through Richmond and down the Peninsula to CSX's Coal Marine Terminal in Newport News.

Figure 3-7
NATIONAL RAIL NETWORK



Source: Cambridge Systematics

Figure 3-8
NORFOLK SOUTHERN SYSTEM MAP



Source: Norfolk Southern

Class III Shortline Railroads

Shortline railroads (defined as line-haul carriers with annual revenues less than \$25 million) have become a critical component of the rail industry, providing benefits to shippers and local communities trying to support economic development to industries. Shortlines act as the originating and terminating railroads for approximately one-third of all rail shipments, often providing the first or last link in business-to-business delivery by providing the intensive switching operations that are not profitable for the Class I railroads. Shortline tracks must handle 286,000 pound capacity railcars and container shipments in order to interface effectively with the Class I railroads.

In Virginia, the shortlines consist of 10 railroads (plus rail operations to the Port of Richmond) with approximately 489 route miles. **Figure 3-10** shows the locations of the shortline system in the Commonwealth and **Figure 3-11** provides a list of the number of carloads carried in 2007 by the shortline operators.

Many of the shortlines were built over 100 years ago using lighter weight rails and less ballast (gravel bed) and in many cases have experienced track and, consequently, operational problems due to postponement of regular maintenance (e.g., deferred maintenance). Many of the lines were previously owned by some of the major Class I railroads which divested them as a result of low traffic volumes or declining revenues. Maintenance of a railroad is a costly, continual operation and the smaller Class III shortline railroads are constrained by the financial challenges of balancing the cost of operations and track maintenance.

Figure 3-9
CSX TRANSPORTATION SYSTEM MAP



Source: CSX

Over the past decade, the industry has generally moved from railcars with a weight and capacity equaling 256,000 pound cars, to 263,000 pound cars, to the current standard of 286,000 pound railcars for transporting heavy bulk materials like coal, grain and lumber. Portions of the Class I system have even been designed for 315,000 pound railcars. Studies have shown that the 286,000 pound railcars can operate on lighter weight rail if all the other track components are in good shape with tight rail joints. Given the typical soil conditions for Virginia, it is more cost-effective to install a heavier weight rail to help resist bending under load and to protect the investment to the rail infrastructure.

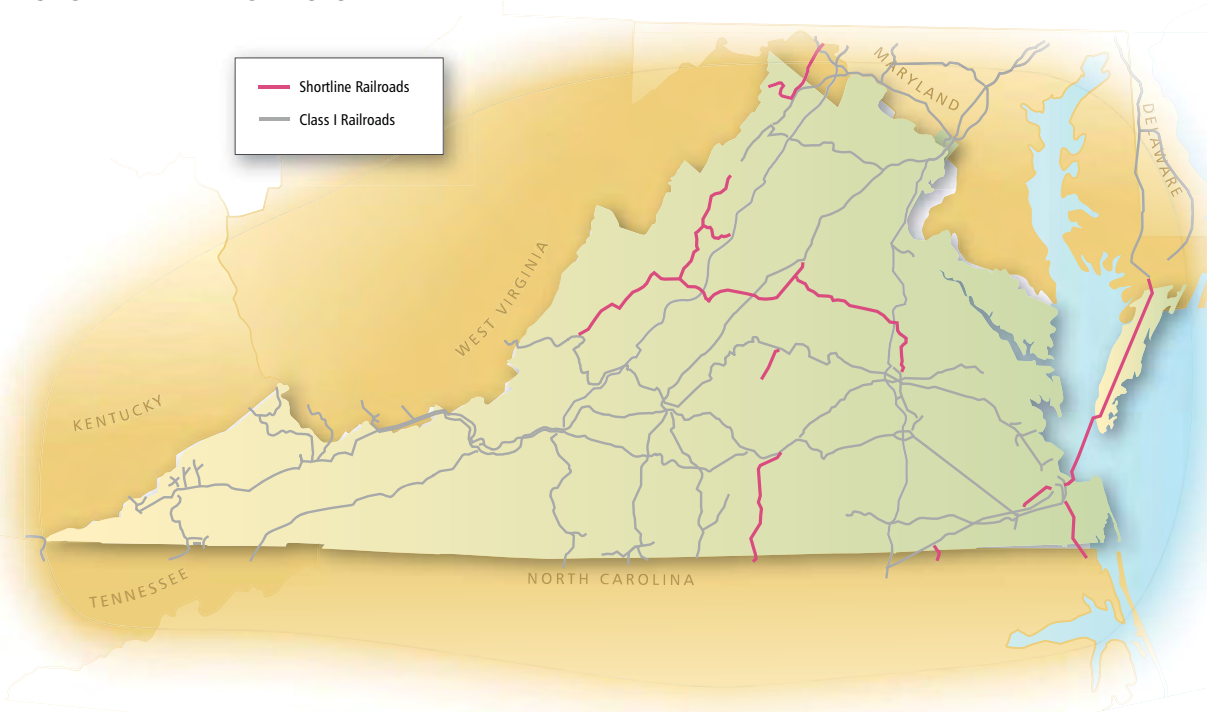
The combination of deferred maintenance and the trend towards the use of newer and heavier 286,000 pound railcars has created a need to invest in shortline infrastructure.

All of Virginia's shortlines are classified by the Federal Railroad Administration (FRA) as Class III railroads (line-haul carriers with annual revenues less than \$25 million), except for the Deepwater Terminal Railroad operated by the City of Richmond. This railroad has no official FRA designation. A brief description of the existing shortline railroads follows.

Bay Coast Railway (BCR)

BCR operates the former Eastern Shore Railroad line, providing service from Pocomoke City, MD, to Norfolk. This north-south route on the Delmarva Peninsula remains the most direct route between the Northeast and Norfolk. The rail line is unique in its ability to handle special over-height rail shipments –

Figure 3-10
SHORTLINE RAILROAD SYSTEM



shipments that cannot be accommodated on the Norfolk Southern and CSX mainland corridors because of tunnel and bridge restrictions (particularly in urban city areas). BCR uses a rail ferry service to span the 26-mile water route across the Chesapeake Bay between Cape Charles and Norfolk. A tug boat is used to move a barge (car float) having a 25 railcar capacity. This float operation is one of only two remaining in the Eastern United States and is the longest water route in the country.

BCR interchanges with Norfolk Southern and the Norfolk and Portsmouth Belt Line Railroad in Norfolk and Norfolk Southern in Pocomoke City, MD.

Buckingham Branch Railroad (BB)

BB is a family-owned shortline railroad operating over 219 miles of historic and strategic track in Central Virginia. The BB also leases and operates a 200 mile long line of railroad from Richmond to Clifton Forge. This line is known as the Richmond Alleghany Division and is further divided into the North Mountain, Washington and Piedmont Subdivisions. The 19-mile line of railroad from Dillwyn in Buckingham County northward to the CSX connection is owned by the BB.

BB receives freight cars from CSX, Norfolk Southern and the Shenandoah Valley Railroad. Amtrak operates

the Cardinal passenger train route three days a week over approximately 130 miles of the 200-mile leased line, providing local station service along the line. CSX also originates unit rock trains that operate on the line.

Chesapeake and Albemarle Railroad (CA)

CA is operated by the North Carolina and Virginia Railroad and is owned by RailAmerica. It operates on 82 miles of trackage leased from Norfolk Southern from Chesapeake to Edenton, NC. CA interchanges with both Norfolk Southern and CSX.

Chesapeake Western Railroad (CHW)

CHW began as an intrastate railroad in west-central Virginia. Through many changes in ownership and the extent of its lines, today it operates as the CHW of Norfolk Southern. A portion of the line south of Harrisonburg to Pleasant Valley is now owned and operated by the Shenandoah Valley Railroad (SV).

Commonwealth Railway, Inc. (CWRY)

CWRY, owned by Rail Link Inc., operates 16.5 miles of track of the former Norfolk, Franklin and Danville Railway line from Suffolk, to Portsmouth. In May 2008, CWRY purchased the remaining interest in the line from Norfolk Southern with funding assistance from DRPT's Rail Enhancement Program.

CWRY is the primary rail carrier to the new Maersk APM Terminal in Portsmouth, providing double-stack rail service to the new container terminal and the future Craney Island Marine Terminal proposed by the Virginia Port Authority. Existing industries, such as the BASF Chemical plant in the West Norfolk area of Portsmouth are also served by CWRY.

CWRY provides dual Class I railroad access to the marine terminals and industries in Portsmouth, with rail connections to both Norfolk Southern and CSX near Suffolk. CWRY also operates a new rail marshalling yard in Suffolk to assemble intermodal train segments from the Maersk APM Terminal into a full unit trains for transit to outlying areas.

Norfolk and Portsmouth Belt Line (NPBL)

NPBL has been operating in Norfolk, Portsmouth and Chesapeake since 1898. Its ownership is 57 percent Norfolk Southern and 43 percent CSX Transportation. The Belt Line interchanges with CA, CSX Transportation, BCR and Norfolk Southern. The Belt Line is a terminal switching company that owns 36 miles of track (plus 27 miles of trackage rights) and links commerce around the deepwater port from Sewells Point to Portsmouth Marine Terminal and including the Southern Branch of the Elizabeth River. All locomotives are leased from Norfolk Southern.

North Carolina and Virginia Railroad (NCVA)

NCVA started in 1987 on the former Seaboard Coast Line Railroad. It interchanges with CSX Transportation in Boykins. The line is owned by RailAmerica.

Shenandoah Valley Railroad (SV)

SV extends northward from Staunton to Pleasant Valley. The line was originally built by the Baltimore and Ohio Railroad and later purchased in 1942 by the CHW. The new shortline was formed in 1993 by several major shippers and adopted the old historic name which was not in use. SV is operated under contract by the Durbin and Greenbrier Valley Railroad (DGVR). DGVR operates four excursion trains on

Figure 3-11

SHORTLINE RAILROADS – SUMMARY OF ANNUAL CARLOADS (2007)

COMMODITY	Bay Coast Railroad	Buckingham Branch Railroad	Chesapeake & Albemarle Railroad	Chesapeake Western Railroad	Commonwealth Railway, Inc. *	Norfolk & Portsmouth Belt Line	North Carolina & Virginia Railroad	Shenandoah Valley Railroad	Virginia Southern Railroad	Winchester & Western Railroad Co.	Deepwater Terminal Railroad **
Base Metals							X			X	X
Milled Grain Products	X	X	X	X		X	X	X			
Gravel and Crushed Stone	X		X							X	X
Plastic and Rubber		X					X			X	X
Wood Products	X	X	X				X	X	X		X
Waste and Scrap							X	X			X
Misc. Manufactured Products			X								X
Nonmetallic Minerals		X				X					
Paper	X	X					X		X	X	X
Basic Chemicals	X				X		X		X		X
Transportation Equipment	X										X
Metallic Ore & Concentrates		X									
Machinery							X				X
Cargo – Not Otherwise Specified	X	X	X		X	X	X	X	X	X	X
TOTALS	1,909	542,888	6,329	N/A	839	25,841	23,974	1,305	3,878	6,277	393

* Does not include containerized cargo from the new Maersk APM Terminal in Portsmouth which opened in late 2007 and will generate many new carloads in the future (as will the future VPA Craney Island Marine Terminal to open in 2017). ** DWT is not classified by FRA.

scenic routes in nearby West Virginia. The railroad interchanges with BB and Norfolk Southern railroads.

Virginia Southern Railroad (VSRR)

VSRR is a 75-mile line that runs from Burkeville to Oxford, NC. A portion of the line between Clarksville and Oxford, NC has not been in use for more than a decade. VSRR is operated by NCVA and is owned by RailAmerica. It is headquartered in Keysville and interchanges with Norfolk Southern. This line section is leased from Norfolk Southern.

Winchester and Western Railroad Company (WW)

WW is Virginia's oldest operating shortline. The 54-mile railroad operates between Gore and Winchester and from Winchester, up through the Eastern Panhandle of West Virginia, to Hagerstown, MD. WW is exclusively a freight line with connections to CSX Transportation and Norfolk Southern. WW has a partnership with H.H. Omps Trucking to transport bulk materials from Omps' facilities in Winchester.

Deepwater Terminal Railroad (DWT)

The Port of Richmond Deepwater Terminal Railroad (DWT) owns approximately four miles of track from downtown Richmond to the Port of Richmond on the west side of the James River. DWT is a terminal and switching shortline railroad served directly by CSX under an operating agreement and indirectly by Norfolk Southern via a switching agreement. DWT extends south between the James River and I-95 within Richmond City limits and primarily serves the Port's imports and exports of containers and miscellaneous bulk cargo. Although DWT is not a

Surface Transportation Board authorized railroad, DWT is recognized by the Commonwealth for its importance for preservation and continuance of operations to serve the Port of Richmond and industries along the line.

Passenger Rail

Amtrak Intercity Rail

When established in 1971, Amtrak was required to operate a basic system of corridor and long distance routes as designated by the U.S. Department of Transportation. Amtrak's enabling legislation (Rail Passenger Service Act) provided for states to contract for additional service. Under this provision, known as Section 403(b), the percentage of costs paid by states changed many times. Section 403(b) of the Rail Passenger Service Act was repealed in 1997 and subsequent legislative directives and current funding levels preclude Amtrak from operating additional services unless those services are state-supported. Therefore, any expansion of rail passenger service in Virginia has to be funded by the Commonwealth.

Figure 3-12 depicts the existing Amtrak national passenger service map and *Figure 3-13* depicts the eight existing Amtrak routes serving Virginia. Ridership by station is shown in *Figure 3-14* and *Figure 3-15* depicts the annual ridership on Amtrak routes between 2000 and 2007. As can be seen from *Figure 3-15*, there has been a steady increase in passenger rail usage in Virginia since 2003, averaging approximately five percent per year. This has been lower than Amtrak's 12 percent national annual average in ridership increase since 2002.

However, recent increases in fuel and energy prices have generated a higher demand for passenger rail that should result in an even higher annual ridership increases than those experienced over the past few years.

In 2007, Amtrak operated 20 daily intercity trains and two tri-weekly trains in the Commonwealth with 929,594 passengers either boarding or alighting within Virginia (a state ridership of 464,797). Including passengers on the routes from other states that are passing through Virginia, the total ridership was 2,006,171 passengers. Additionally, Amtrak estimates that of the 3.7 million Amtrak passengers who annually use the Washington DC Union Station, well over one million reside in Virginia.

Amtrak expended \$50,021,407 for goods and services in Virginia in FY2007. At the end of FY2007, Amtrak employed 760 Virginia residents and the total wages of Amtrak employees living in Virginia were \$50,219,471.

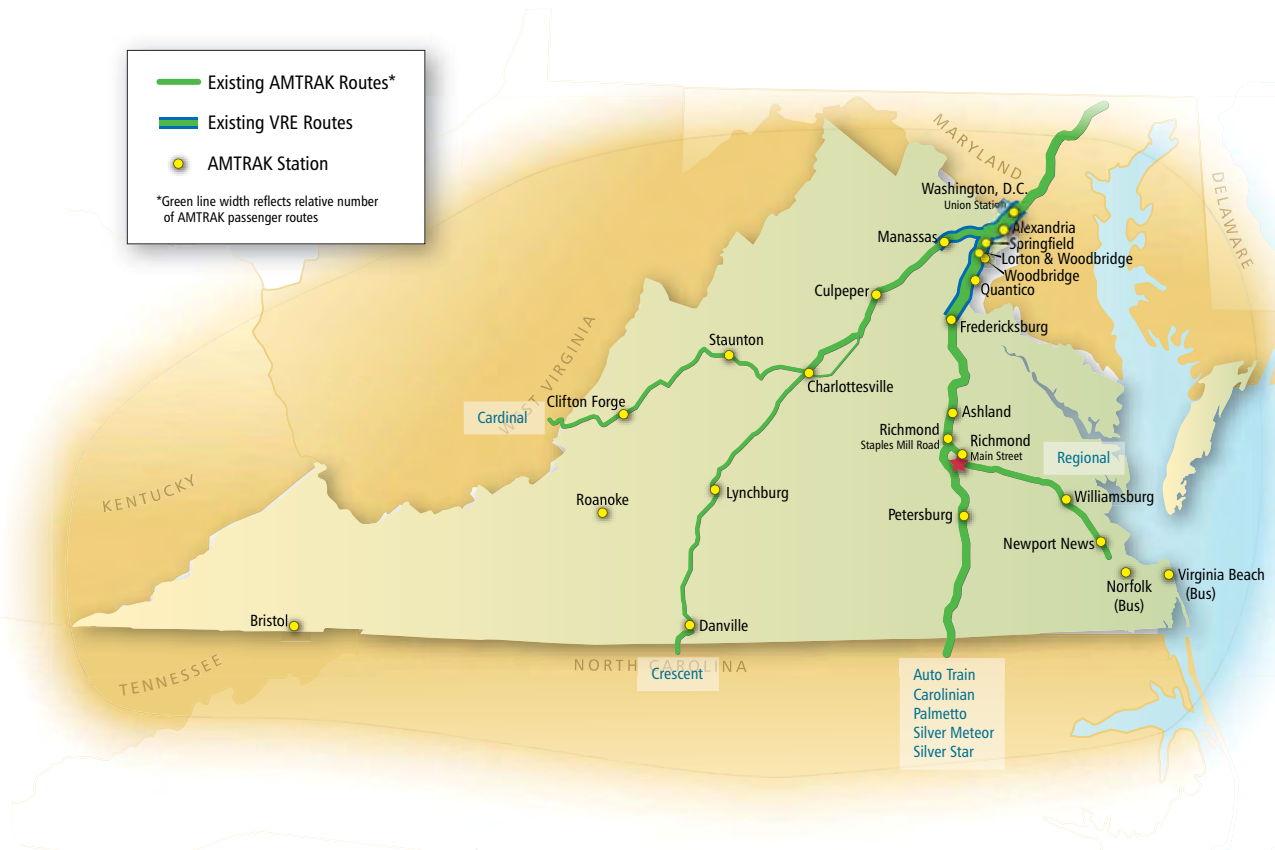
Unfortunately, according to Amtrak's 2006 Annual Report, one key performance indicator that has not moved in the right direction is the relatively poor on-time performance of many long-distance and (non-Northeast Corridor) corridor trains. Where Amtrak owns the track and controls the dispatching of trains (the Northeast Corridor), on-time performance is generally good. However, on routes where Amtrak operates over rail infrastructure owned, operated and dispatched by freight railroad companies (as is the case in Virginia), on-time performance is often

Figure 3-12
AMTRAK NATIONAL PASSENGER RAIL ROUTES



Source: Amtrak

Figure 3-13
AMTRAK PASSENGER ROUTES SERVING VIRGINIA



poor. In FY2006, only 30 percent of Amtrak's long-distance trains arrived on time. **Figure 3-16** shows Amtrak on-time performance for 2007.

Amtrak delays are usually due to insufficient rail capacity and the need for additional infrastructure investment by freight railroads. There is also a fundamental contradiction between freight and passenger rail. Freight rail succeeds when demand is greater than capacity. Passenger rail, on the other

hand, succeeds when capacity is greater than demand. Bridging this operational chasm is critical to resolving the dilemma of on-time performance for passenger rail. Certainly the current scenario hampers growth and impedes Amtrak's ability to provide reliable service. However, Virginia can only do so much absent national policy changes.

A brief description of Amtrak's eight passenger routes serving Virginia follows.

Northeast Corridor Regional Route

- Daily passenger rail service from Newport News to Boston, MA.
- Amtrak station stops in Virginia include Newport News, Williamsburg, Richmond (Main Street and Staples Mill), Ashland, Fredericksburg, Quantico, Woodbridge, Springfield, Alexandria and Washington, DC.
- Service is provided on CSX tracks.
- Currently there are four daily round trips to Richmond with two continuing to Newport News.
- Annual ridership in 2007 was 224,760 passengers from Virginia and a total ridership of 401,510 passengers including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 60 percent.
- This regional service (which includes the I-95 and I-64 transportation corridors) carried approximately 49 percent of all Amtrak passengers in Virginia in 2007 as shown in **Figure 3-17**.

Carolinian Route (Train 79/80)

- Daily passenger rail service from Charlotte, NC to New York City.
- Amtrak station stops in Virginia include Petersburg, Richmond (Staples Mill), Fredericksburg, Quantico, Alexandria and Washington, DC.
- Service is provided on a combination of Norfolk Southern, CSX and Amtrak tracks.
- Annual ridership in 2007 was 33,221 passengers from Virginia and a total ridership of 256,212 passengers, including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 27 percent.
- This rail service is part of the I-95 transportation corridor.

Figure 3-14

ANNUAL AMTRAK RIDERSHIP BY STATION – VIRGINIA (2007)

		Annual Ridership Statistics - Source: Amtrak FY 2007								
		Northeast Corridor Regional ^a	79/80 Carolinian	89/90 Palmetto	91/92 Silver Star	97/98 Silver Meteor	53/52 Auto Train	19/20 Crescent	50/51 Cardinal	TOTALS
	Station									
Boardings										
	Alexandria	26,300	7,689	4,161	3,351	2,091		3,148	1,343	48,173
	Woodbridge	7,269	68							7,337
	Quantico	11,897	1,892	2						13,791
	Fredericksburg	26,057	3,974	11						30,042
	Ashland	6,059								6,059
	Richmond (Main St. + Staples Mill)	78,926	18,959	13,222	6,937	5,096				123,140
	Williamsburg	20,490								20,490
	Newport News	48,126								48,126
	Manassas							2,410	1,058	3,468
	Culpeper							1,367	557	1,924
	Charlottesville							13,457	8,874	22,331
	Lynchburg							8,971		8,971
	Danville							2,242		2,242
	Staunton								2,925	2,925
	Clifton Forge								1,621	1,621
	Other Virginia	560	3,533	2,385	2,539	802	113,545			123,384
	Outside Virginia	175,716	220,097	137,217	316,305	283,746	104,277	226,013	78,776	1,542,147
Alightings										
	Alexandria	24,609	7,544	4,542	4,096	2,888		4,218	1,664	49,561
	Woodbridge	7,956	68							8,024
	Quantico	12,564	1,700	23						14,287
	Fredericksburg	27,361	4,191	21						31,573
	Ashland	6,850								6,850
	Richmond (Main St. + Staples Mill)	74,393	14,231	11,087	15,842	8,734				124,287
	Williamsburg	20,531								20,531
	Newport News	48,347								48,347
	Manassas							2,625	1,265	3,890
	Culpeper							1,487	740	2,227
	Charlottesville							15,359	8,995	24,354
	Lynchburg							9,395		9,395
	Danville							2,420		2,420
	Staunton								3,371	3,371
	Clifton Forge								1,595	1,595
	Other Virginia	1,115	2,592	2,539	2,743	1,562	104,277			114,858
	Outside Virginia	177,784	225,886	138,786	306,451	278,521	113,545	222,104	77,524	1,540,601
^a Only includes Regional trains operating south of Washington										
	Virginia Boardings & Alightings	449,520	66,441	37,993	35,508	21,203	217,822	67,099	34,008	929,594
	Virginia Ridership	224,760	33,221	18,997	17,754	10,602	108,911	33,550	17,004	464,797
	Outside Virginia Boardings & Alightings	353,500	445,983	276,003	622,756	562,267	217,822	448,117	156,300	3,082,748
	Outside Virginia Ridership	176,750	222,992	138,002	311,378	281,134	108,911	224,059	78,150	1,541,374
	Total Route Boardings & Alightings	803,020	512,424	313,996	658,264	583,470	435,644	515,216	190,308	4,012,342
	Total Ridership	401,510	256,212	156,998	329,132	291,735	217,822	257,608	95,154	2,006,171

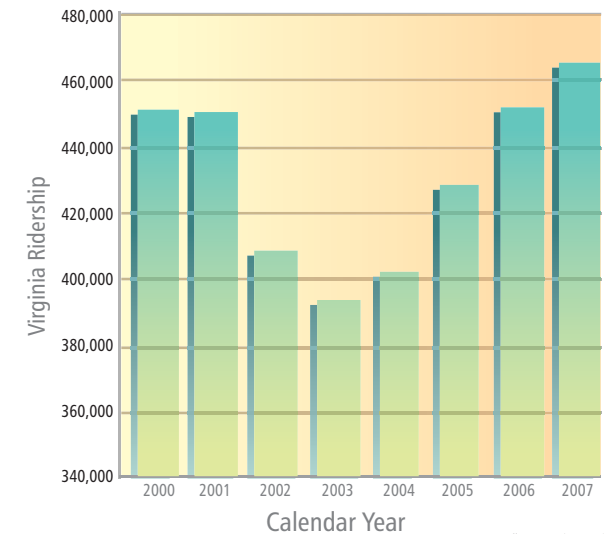
Source:Amtrak

Palmetto Route (Train 89/90)

- Daily passenger rail service from Savannah, GA to New York City.
- Amtrak station stops in Virginia include Petersburg, Richmond (Staples Mill), Alexandria and Washington, DC.
- Service is provided on a combination of CSX and Amtrak tracks.
- Annual ridership in 2007 was 18,997 passengers from Virginia and a total ridership of 156,998 passengers, including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 55 percent.
- This rail service is part of the I-95 transportation corridor.

Figure 3-15

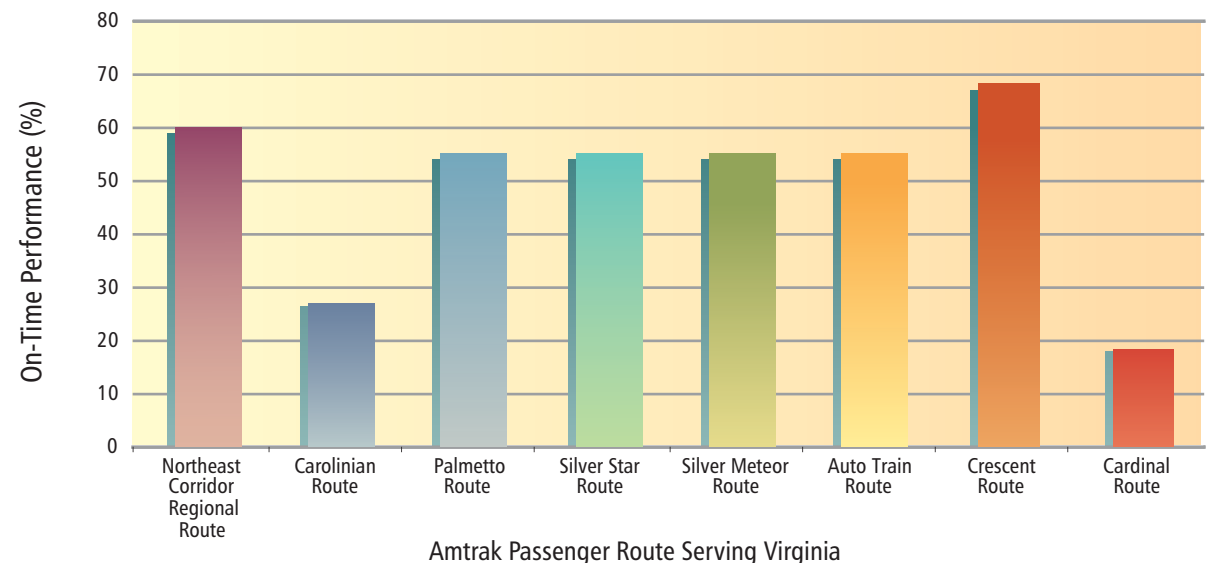
AMTRAK ANNUAL VIRGINIA RIDERSHIP (2000 – 2007)



Source:Amtrak

Figure 3-16

AMTRAK ON-TIME PERFORMANCE OF PASSENGER ROUTES SERVING VIRGINIA



Source: Amtrak

Silver Star Route (Train 91/92)

- Daily passenger rail service from Miami and Tampa, FL to New York City.
- Amtrak station stops in Virginia include Petersburg, Richmond (Staples Mill), Alexandria and Washington, DC.
- Service is provided on a combination of CSX and Amtrak tracks.
- Annual ridership in 2007 was 17,754 passengers from Virginia and a total ridership of 329,132 passengers including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 55 percent.
- This rail service is part of the I-95 transportation corridor.

Silver Meteor Route (Train 97/98)

- Daily passenger rail service from Miami, FL to New York City.
- Amtrak station stops in Virginia include Petersburg, Richmond (Staples Mill), Alexandria and Washington, DC.
- Service is provided on a combination of CSX and Amtrak tracks.
- Annual ridership in 2007 was 10,602 passengers from Virginia and a total ridership of 291,735 passengers including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 55 percent.
- This rail service is part of the I-95 transportation corridor.

Auto Train Route (Train 53/52)

- Direct daily passenger rail service and automobile transfers between Lorton and Sanford, FL (no station stops in between).
- Service is provided on CSX tracks.
- Annual ridership in 2007 was 108,911 passengers from Virginia and a total ridership of 217,822 passengers including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 55 percent.
- This rail service is part of the I-95 transportation corridor.

Crescent Route (Train 19/20)

- Daily passenger rail service from New Orleans, LA to New York City.
- Amtrak station stops in Virginia include Danville, Lynchburg, Charlottesville, Culpeper, Manassas, Alexandria and Washington, DC.
- Service is provided on a combination of Norfolk Southern and Amtrak tracks.
- Annual ridership in 2007 was 33,550 passengers from Virginia and a total ridership of 257,608 passengers including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 68 percent.
- This rail service is part of the I-81 and Route 29 transportation corridors.

Cardinal Route (Train 50/51)

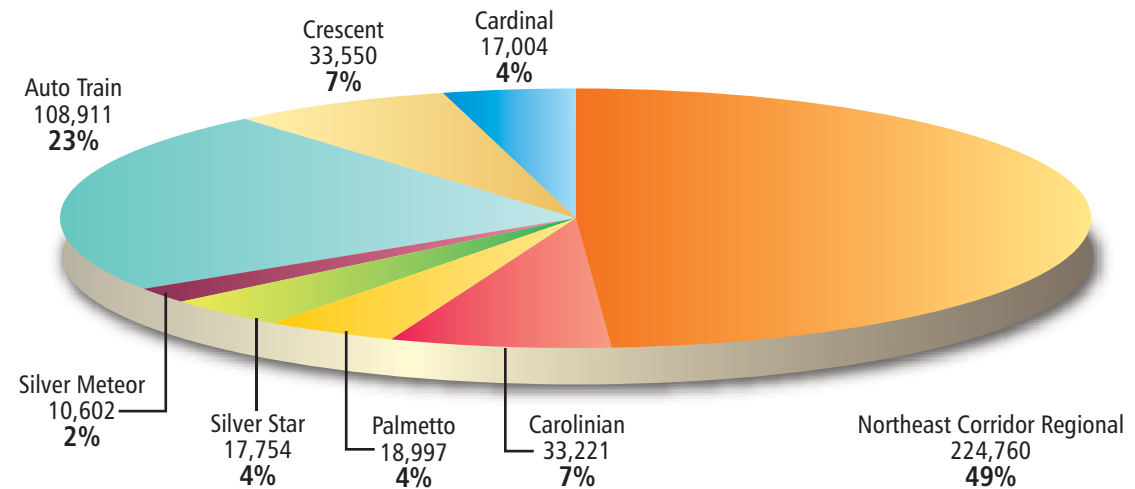
- Passenger rail service three times a week from Chicago, IL to New York City.
- Amtrak station stops in Virginia include Clifton Forge, Staunton, Charlottesville, Culpeper, Manassas and Washington, DC
- Service is provided on a combination of Norfolk Southern, CSX, BB and Amtrak tracks.
- Annual ridership in 2007 was 17,004 passengers from Virginia and a total ridership of 95,154 passengers, including out-of-state passengers.
- On-time performance for the first quarter of 2008 was 18 percent.
- This rail service is part of the I-81 and Route 29 transportation corridors.

Virginia Railway Express

VRE was founded in 1992 with a vision to provide a safe, convenient, energy-efficient public transportation alternative to driving congested highways from the Northern Virginia suburbs to the business districts of Alexandria, Crystal City and Washington, DC. Organizationally, VRE is a joint operation undertaken by two commissions – the Northern Virginia Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission (PRTC) – which represent the Northern Virginia counties and municipalities in the service area. Members of both entities sit on the VRE Operations Board, which governs VRE. Daily operations and capital projects are financed from a combination of federal, state and local grants and through the sale of tickets (often referred to as the fare box revenues).

Figure 3-17

AMTRAK - VIRGINIA RIDERSHIP - VIRGINIA ROUTES (COMMONWEALTH PASSENGERS ONLY = 464,797)



Source: Amtrak

In 2007, VRE reported a total ridership of 3,435,561 passengers as follows:

- An average of 15 trains per day on the Fredericksburg Line with 1,816,826 passengers per year (I-95 corridor), operated on CSX tracks.
- An average of 16 trains per day on the Manassas Line with 1,618,735 passengers per year (I-66 and Route 29 corridors), operated on Norfolk Southern tracks.

As illustrated in *Figure 3-18*, VRE has been successful in providing an alternative to driving. Since 1992, daily trips have increased from 6,500 to upwards of 15,000 passenger trips per day today. Each weekday, VRE's 29 revenue trains operate over two branch lines, covering 90 route miles and

serving 18 stations in eight Northern Virginia jurisdictions. From 2005 to 2007, VRE experienced declines in ridership due to lowered on-time performance brought about by equipment breakdowns, train traffic congestion and heat and other weather delays. Increasing fares and service cutbacks also impacted VRE ridership during this three-year period. The summer of 2006 marked the worst extended on-time performance in the history of VRE. *Figure 3-19* illustrates on time performance trends while *Figure 3-20* illustrates delay causes for FY2007.

VRE's improved performance can be largely attributed to investments made by the Commonwealth as part of VTA2000 and a 2007

general fund special appropriation that provided funding for projects to add capacity and improve operational efficiency. These improvements, totaling \$77.45 million of state funding, supported the costs

for projects to add third track, improve signaling and build a new bridge over Quantico Creek. In addition, CSX performed significant rail infrastructure improvement programs, including

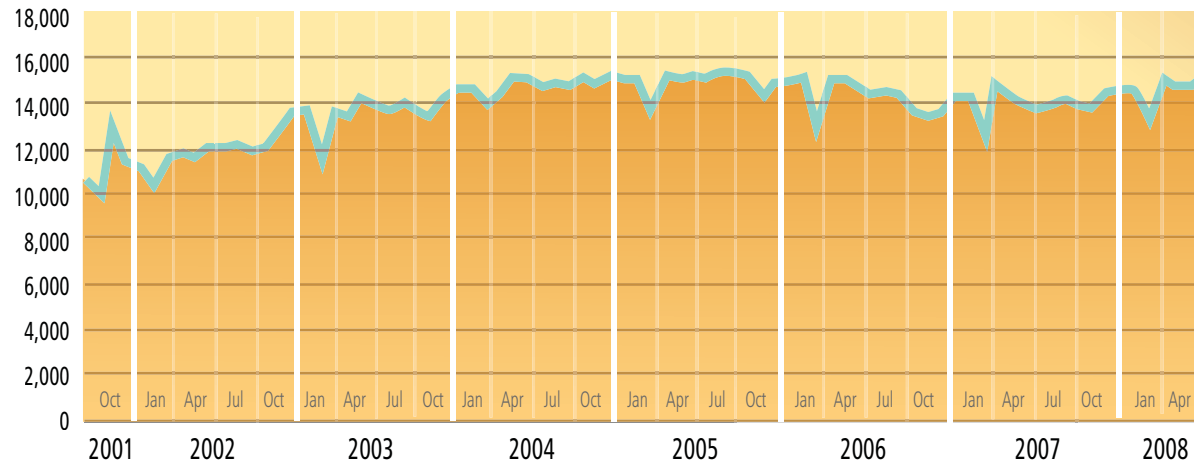
replacing over 80,000 ties and several miles of rail. These improved on-time performance and increased capacity. In exchange for these investments, the Commonwealth was able to secure four round trip



Passengers assemble to board the Virginia Railway Express commuter rail service.

Figure 3-18

VRE RIDERSHIP, JULY 1997 – MAY 2008



train slots to operate expanded passenger rail service. The Commonwealth has also allocated \$20 million for the purchase of 50 railcars and \$15 million to provide for the purchase new locomotives.

VRE commuter trains are operated by Amtrak under contract with NTC and PRTC.

Figure 3-20

VRE CAUSES OF DELAY

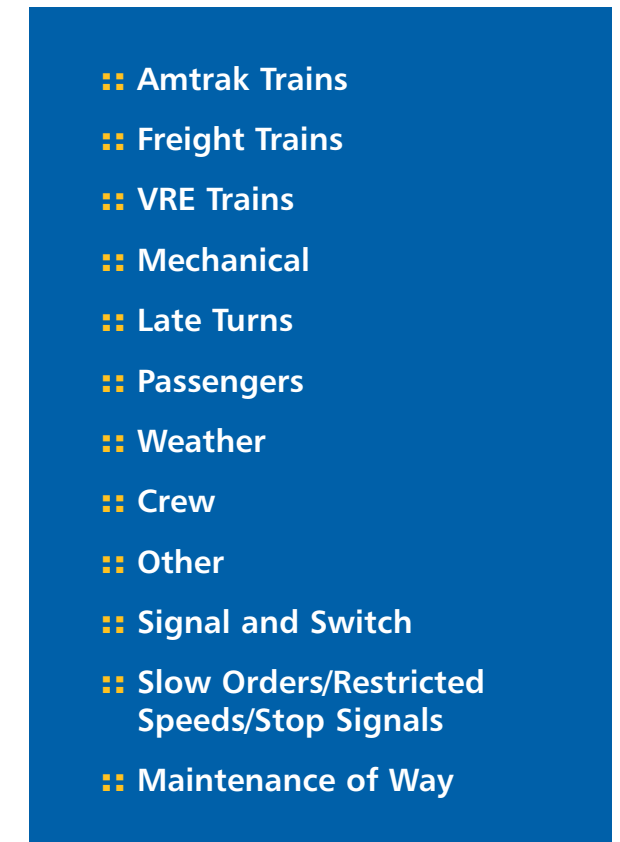
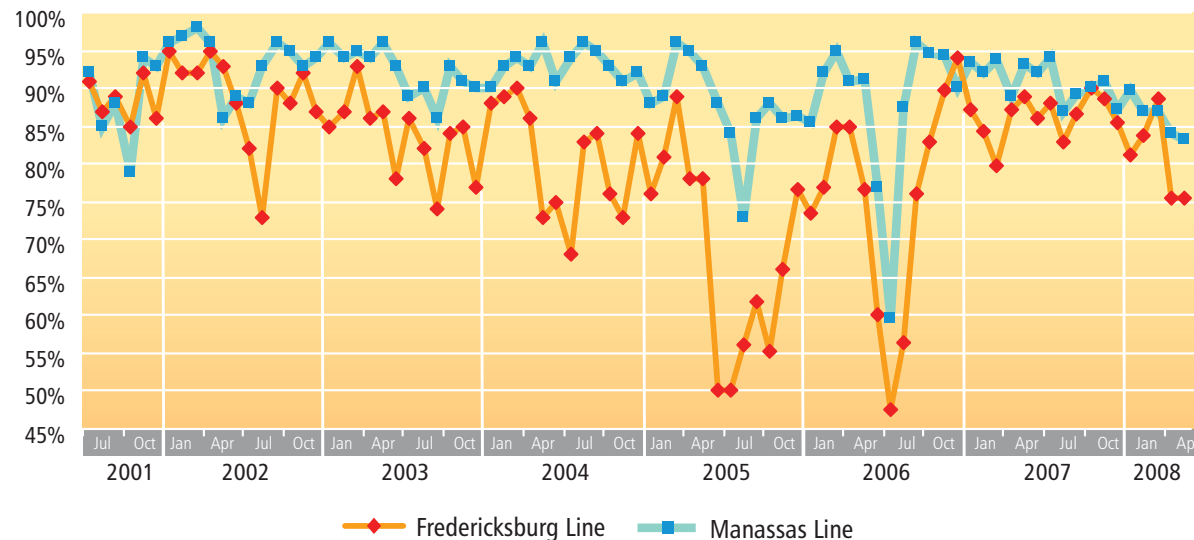


Figure 3-19

VRE ON-TIME PERFORMANCE, JULY 2001 – MAY 2008



The Business of Freight Railroads

Railroads' Capital Investment

U.S. railroads are private corporations that own their rail rights-of-way, including the tracks. These companies are large publicly owned stock companies with a fiduciary responsibility to conduct their business in a manner that maximizes stockholder fiscal returns. To develop effective public private partnerships, DRPT and the railroads work together to create “win-win” situations where the railroads meet their responsibility to minimize risk and maximize profits for their shareholders, the public need for effective and efficient passenger rail service is provided, freight is diverted from trucks to rail on crowded highways to reduce congestion and improve safety and air quality in urban areas. Operating in a highly competitive environment, some of the detailed operations of railroad companies is privileged information and is not shared with the public when developing these projects.

Norfolk Southern and CSX operate in many states other than Virginia and their corporate decisions on which rail improvement projects are to be financed within any particular year are based on the best interests of the respective railroads after considering the business climate, risk and return on investment. Rail projects that are important to the Commonwealth compete with other states asking Norfolk Southern and CSX to use finite financial resources to implement rail improvement projects in their states.



Double-stack containers literally double the capacity of freight trains, delivering twice the amount of freight on just one train and removing an average of 200 trucks at a time from highways.

Passenger Rail Service on Property Owned by Freight Railroads

The position of the freight industry with respect to passenger rail service has been clear and consistent:

- Passenger rail service must be complementary to, not in conflict with, freight rail development.
- Freight railroads should be fully compensated for the use of their property by passenger trains.
- Absent voluntary negotiated agreements, freight railroads should not be forced to give passenger rail operators access to their property.
- Freight railroads should not be expected to subsidize passenger rail.

- Freight railroads do not want exposure to any liability associated with passenger train service. At a minimum, freight railroads expect some enforceable limits on freight rail liability. Without such limits set at a policy level by the federal government, liability issues will remain a major obstacle in the growth of passenger rail service.

The nation's privately-owned freight railroads want passenger rail to succeed and at present freight railroads are successful partners with passenger rail operators across the country, including in Virginia. Amtrak is the only continental U.S. intercity passenger railroad. Approximately 97 percent of the

22,000 miles that Amtrak currently operates over is owned by freight railroads. Many new passenger rail routes are being considered in Virginia and throughout the nation to relieve highway traffic congestion, improve travel mobility and protect the environment; most of these are on tracks owned by freight railroads.

In 1970, for permission to exit the passenger business, freight railroads agreed to a number of Amtrak terms:

- Freight railroads must give Amtrak access to their tracks upon request
- Freight railroads must charge heavily discounted rates for that access
- Freight railroads must give Amtrak trains priority over all other trains

Amtrak pays fees to freight railroads to cover some of the costs associated with Amtrak corridor and long-distance intercity passenger train operations on freight tracks, but, according to the freight industry, these do not come close to the full costs incurred by freight railroads for hosting Amtrak trains. However, passenger trains run at higher speeds on rigorous schedules and require certain track standards and design to do so. The freight trains benefit because a higher grade track enables them to run their trains at higher speeds and even better schedules. These tighter schedules improve freight railroads' ability to operate intermodal freight movement.

Based on Association of American Railroad (AAR) data, the issue of full compensation has become more important in recent years as rail capacity has become increasingly constrained. When Amtrak was

created in 1970, there were few commuter trains providing corridor services. Since then, average freight rail density has increased 379 percent, with the result that available train "slots" on major rail corridors have become scarce. If passenger trains fill these slots at below-market prices, the result is a major subsidy from freight to passenger rail. If slots are not available to freight trains, this also limits the ability of freight railroads to serve those areas.

Freight railroads are not required to allow commuter rail operators like VRE to operate over their rail lines. Lacking Amtrak's statutory rights of access to freight railroads, commuter railroads must negotiate with freight railroads. These negotiations often are very difficult because commuter rail is typically operated in larger metropolitan areas along corridors where intermodal trains and other high priority scheduled freight trains also operate to support larger population and employment centers. The AAR reports that in 2006, the Class I railroads operating in the US had an average Revenue per ton mile of \$0.0284 and that the average tons per train was 3,163. It can be calculated that, on average, a U.S. Class I railroad earns approximately \$89.83 per train-mile. Compare that to VRE, for example, which pays the host freight railroad a \$17.47 per train-mile access fee under its operating agreements. Accordingly, the railroads' key negotiation requirement is the provision of sufficient capacity to support the desire for new and or expanded commuter rail service.

Commuter railroad operators have learned that capacity is just one of the issues that needs to be negotiated with the railroad owner. Issues related to

passenger priority, slow orders on the railroad and maintenance needs and practices also impact the ability to provide efficient commuter rail service. The current VRE operating agreement that allowed VRE access to CSX rail lines requires the replacement of track capacity through the addition of a third track between Fredericksburg and Washington, DC. This requirement must be fulfilled for additional train capacity necessary to operate increased commuter rail service in the corridor. Since VRE's inception in 1992, VRE and its funding partners have invested over \$100 million dollars towards capital improvement associated with the third track requirement. Improvements to date will be dwarfed by future costs for improvements associated with major bridges such as the Potomac River, Aquia Creek, Powell's Creek, Neabsco Creek, Rappahannock River and Occoquan River.

While all commuter rail transit agencies share their operations with freight railroads to different degrees, they have the option to avoid negotiations with railroads by electing to acquire dedicated right-of-ways and facilities to support passenger rail service. However, rail transit agencies have not chosen this option due to land use considerations, efficiency and cost. From a land use perspective, in dense metropolitan areas it would be nearly impossible to acquire the land needed to support rail right-of-way — consider the difficulty of acquiring right-of-way for a new line or interstate through Hampton Roads, Richmond and the Northern Virginia regions. It would also be inefficient to have a dedicated right-of-way for most commuter rail operations since these are typically designed and operated to accommodate peak hour

travel only. Finally, the cost of acquiring right-of-way in metropolitan regions is expensive, ranging from \$32 - \$95 per square foot in Northern Virginia and \$0.75 - \$1.50 per square foot in agricultural areas, based on VDOT right-of-way. Combining this with the expense of constructing rail (ranging from \$5 to \$6 million per mile) makes it cost prohibitive to construct dedicated commuter rail infrastructure.

Preemptive Rights: The Railroad's Right to Build Facilities

Class I railroads are regulated by the Surface Transportation Board (STB, the former Interstate Commerce Commission [ICC]), not by local or state governments. The ICC Termination Act of 1995, Pub. L. No. 104-88, 109 Stat. 803 (1995) (ICCTA), shields railroad operations and facilities from the application of most state and local laws. This is known as the Federal preemption provision and is contained in 49 U.S.C. 10501(b). While railroads can be required to comply with some local health and safety rules, such as fire and electric codes, this provision exempts railroads from local land use and zoning requirements. Preemptive rights, however, do not exempt railroads from certain Federal environmental statutes, such as the Clean Air Act (locomotive emissions) and the Clean Water Act (e.g., wetlands protection).

Projects that utilize federal funds must be in compliance with appropriate National Environmental Policy Act (NEPA) requirements as administered by the Federal Railroad Administration (FRA) and/or the Federal Highway Administration (FHWA). Since most rail improvement projects are within existing rights of way with minimal environmental impacts, the

majority of rail projects qualify for a "Categorical Exclusion" in accordance with federal NEPA requirements and regulations. In situations where the anticipated environmental impacts might be moderate, FRA and/or FHWA may require the preparation of an "Environmental Assessment"; or for large projects with portions of the project outside of existing rail rights of way and where the anticipated environmental impacts might be significant an "Environmental Impact Statement" may be required. The preemptive rights of railroads exempt railroads from local land use and zoning requirements. However, these rights do not exempt the railroads from these environmental requirements.

Indemnification

The operating agreement between CSX and VRE states: The Commissions shall protect, defend, indemnify and hold harmless Railroad...and all liability for death personal injury or property damage (including, but not limited for death, personal injury or property damage [including, but not limited to the property and employees of a Railroad]), which is attributable in any way to, or which is exacerbated by, the operation of the Service over the Tracks of Railroad, or to the presence of cars, equipment, personnel, contractors, agents or passengers of the Commissions or an Operator on or about the property of Railroad. The Commissions shall indemnify and hold Railroads harmless under Article Nine whether or not such death, injury or damage is caused, in whole or in part, by the negligence, regardless of its character or degree, of Railroad and whether the damages are compensatory, punitive or exemplary; provided that the liability of the

Commissions under this Article shall not exceed Two Hundred Million Dollars (\$200,000,000).

It is standard practice for railroads to request indemnification and hold harmless contractual language in its access or operating agreements with public entities related to accidents or incidents that occur as a result of allowing passenger rail operations on freight rail. The request to be indemnified and held harmless is often broad and includes coverage for events that are attributable to gross negligence or unsafe practices by the host railroad. This language is problematic for special transportation districts and can be a "deal breaker" for state governments that are unwilling to waive sovereign immunity. Typically, a state requires activity by its legislature before allowing a state agency to enter into an agreement that holds a private company harmless from liability for damages, loss or injuries caused by the sole or joint negligence of the private company.

The cost for insurance for public entities that enter into these agreements is typically very expensive, especially in the early years of operation, since there is insufficient accident information for an insurance carrier to assess risk. The request for indemnification has been exacerbated by concerns associated with acts of terrorism. VRE has experienced significant increases in insurance premiums since 2001. It's insurance premium has increased by 86 percent since 2001 and totals approximately \$3.9 million (FY2008) annually, representing 6.6 percent of its FY2008 operating budget.

High Speed Rail

Background

In the late 19th and early 20th centuries, passenger railways were the major form of mass transportation. Railway companies in the U.S. and Europe used streamlined trains from the early 1930's for high speed services with an average speed of up to 80 mph and top speeds of more than 100 mph. With this service they were able to compete with airline travel at that time.

Following World War II, significant improvements to automobiles and aircraft placed personal transport within the means of most Americans. With severe antitrust restrictions on railroads and with government subsidization of interstate highways and airports, automobile travel surged and passenger rail travel experienced a significant decline. In Europe and Japan, emphasis was given to rebuilding the railways after WWII, whereas in the U.S., emphasis was given to building a vast national interstate highway system and airports.

Urban mass transport systems in the United States were largely abandoned in favor of road expansion. Compared to Europe and Japan, U.S. passenger railways have been less competitive partly because the federal government has tended to encourage and fund road and air transportation. But today — as population grows and population density increases in major urban corridors, as highway and airline congestion increase and as energy costs increase — rail ridership is increasing across the country.



High speed rail service offer travelers a competitive choice to air travel with lower ticket costs and a 90 mile-per-hour trip to their destinations.

It is instructive to compare U.S. passenger and freight rail service with other major countries in the world. For other developed nations of the world, there is significantly more passenger rail ridership on rail lines than freight. Inversely, for the United States, there is significantly more freight hauled by rail than passenger rail. India has one of the highest uses of passenger rail (251 billion passenger-miles) and among the lowest usage of freight rail (175 billion ton-miles per year). The opposite is true for the U.S., where passenger rail use is low when compared with developed countries (six billion miles per year) but freight rail usage is the highest in the world (1,390 billion ton-miles per year).

High speed rail is primarily a type of passenger rail service that operates significantly faster than the normal speed of rail traffic. In the U.S., the FRA has established a threshold of 90 mph for high speed rail, whereas in Europe the threshold has been set at 124 mph. There are no single standards and lower speeds are often required even on a high speed corridor by local constraints.

Figure 3-21
HIGH SPEED CORRIDORS



The world's first "high speed train" service occurred in Japan, which started in 1964 with trains speeds of approximately 125 mph on the Tokyo–Nagoya–Kyoto–Osaka route. In Europe, the first high speed rail was Italy's 125 mph service in 1969. The only high speed rail service at present in the U.S. is Amtrak's Acela Express, which operates in the Northeast Corridor between Boston, MA, New York City and Washington, DC; it uses tilting trains to achieve speeds of up to 150 mph on existing tracks. While high speed rail is designed mainly for passenger travel, it also offers possibilities for freight service such as mail, overnight deliveries and other types of cargo.

High-speed rail tracks must have high-turn radii, be welded together and be extremely well-supported and anchored to avoid vibrations and other damage. The track itself in most cases is uninterrupted, with roads and other tracks crossing over bridges. Although most existing forms of high speed rail are electrically driven via overhead cables, other forms of propulsion, such as diesel locomotives, may be used – particularly the new generation of environmentally friendly and fuel-efficient diesel-electric locomotives. Magnetic levitation (maglev) trains are considered high speed rail; however, due to their unique track-oriented vehicles and their inability to operate on conventional railroads, they are usually considered a separate type of high speed transport system.

In 2002, the FRA designated 10 high speed corridors under Section 1010 of the Intermodal Surface Transportation Act of 1991 (ISTEA) and

Section 1103(c) of the Transportation Efficiency Act for the 21st Century (TEA-21) for passenger rail service in high population density and congested intercity sections of the nation. This designation allows a corridor to receive specially targeted funding for highway-rail grade crossing safety improvements and recognizes the corridor as a potential center of high speed rail activity. These designated corridors are shown in **Figure 3-21**. They include a high speed rail corridor from Washington, DC to Richmond and the Southeast High Speed Rail Corridor between Richmond and Charlotte, NC.

According to FRA, a number of states are planning high speed rail systems and making the necessary improvements. The technologies these states are planning to use typically involve upgrades of existing rail lines, rather than entirely new rail lines exclusively devoted to 150 to 200 mph trains, such as operate in Europe or Japan or 250-300 mph maglev, such as planned in Germany and Japan. Amtrak has also offered to operate "Acela Regional" type service in other state-sponsored corridors if funds are made available for the necessary capital upgrades. In addition to upgrading a number of rail lines, California has prepared a business plan to construct a 200 or 300 mph system.

High-Speed Rail in Virginia

Fast, efficient passenger rail service is important for Virginia. The Commonwealth has initiated studies and preliminary design associated with high speed rail corridors passing through Virginia and has participated in Multi-State Coalitions looking at improving passenger rail services in the mid-Atlantic

region. Because of the high capital cost associated with high speed rail systems, the Commonwealth has been following an incremental approach in past years to construct rail improvements that eliminate key rail chokepoints and to increase rail speeds and on-time performance on existing passenger rail corridors – particularly the I-95 and I-81 transportation corridors. Virginia, like all states, has been awaiting federal legislation that would provide a national policy and funding framework (similar to the development of the interstate and airport system) to allow high speed passenger rail services to become a reality in Virginia in the not-to-distant future. Bordering Virginia from Washington, DC to the north, is Amtrak's 165 mph high speed Northeast Corridor. The Northeast Corridor has recently been extended northward from New York City to Boston, MA. This extension has proven that high speed passenger rail in the United States is a new stakeholder in the growth of America's ground transportation system. Key considerations for high speed rail will be available funding and the development of capacity to support increased freight flows and safe operations.

The I-95 corridor has been identified as a priority corridor for high speed rail. The Southeast High Speed Rail (SEHSR) corridor would extend high speed rail service south from Washington, DC, to Richmond and on to Raleigh and Charlotte, NC. The SEHSR corridor would later expand further south from Charlotte, NC to New Orleans, LA via Atlanta, GA and from Raleigh, NC to Jacksonville, FL and east from Richmond to Hampton Roads. DRPT and the rail division of the North Carolina department of



Rail safety is a top priority in Virginia. DRPT works cooperatively with VDOT to provide safer at-grade highway/rail crossings.

transportation have joined forces to support the planning and engineering of projects in Virginia and North Carolina.

The project length is approximately 168 miles, of which 99 miles are in Virginia. The capital cost of implementing the SEHSR will likely be a multi-billion dollar project. The Tier 1 Environmental Impact Study (EIS) of SEHSR ridership and fare structure indicated that the project would require no subsidies

and would pay for itself in terms of annual operating costs. While the Tier 1 EIS ridership and revenue forecasts are positive, DRPT will take a more conservative approach in estimating ridership and revenue as the project progresses through the planning and engineering process. The next phase of the EIS preparation is currently underway and includes preliminary design of the system. This should be completed by 2011 at which time final design and construction could be initiated.

In addition to the SEHSR Tier 1 EIS, DRPT is working to select the corridor's route alignment between Richmond's Main Street Station and Doswell. The actual route selection was not made in the SEHSR Tier 1 EIS and FRA requires an Environmental Assessment to select one of the two route options to continue through the federal planning process. Analysis to select the high speed rail route between Main St. Station and Doswell, compares the Eastern route along the Buckingham Branch line and the

Western route along the CSX line sections began in February 2008 and is scheduled for completion in the summer of 2009. Work on this project includes identifying track infrastructure and facility needs, assessing environmental impacts and receiving public comments.

Rail Safety

Highway-rail grade crossing safety is a critical rail safety issue. According to AAR, from 1980 through 2007 the number of grade crossing incidents fell 74 percent, while the grade crossing incident rate (incidents per million train-miles) fell 77 percent. Based on accident data, 2007 was the safest year ever in terms of grade crossing safety.

AAR estimates that there are approximately 145,000 public grade crossings in the United States and that improving grade crossing safety represents an enormous challenge that will take the combined efforts of railroads; state, local and federal governments; public safety officials; and the public. A freight train moving at 55 miles an hour can take a mile or more to stop. According to a June 2004 report issued by DOT's Inspector General, 94 percent of all grade crossing accidents are caused by risky driver behavior and about half of all grade crossing accidents occur at crossings that are already equipped with active warning devices such as bells, gates and lights.

- **National:** At the national level there were 2,728 collisions, 986 injuries and 330 fatalities associated with highway-rail grade crossings. There were 393 injuries and 486 fatalities associated with trespassers on railroad rights of way.

- **Virginia:** Within the Commonwealth, there were 64 injuries and **no fatalities** associated with highway-rail grade crossings. There were six injuries and five fatalities associated with trespassers on railroad rights of way.

In Virginia, DRPT and VDOT have responsibilities involving grade crossing safety. VDOT administers the Federal Section 130 Grade Crossing Safety Funds, but often DRPT Rail Preservation Funds are used to improve grade crossings as part of a series of improvements in a stretch of shortline railroad.

The Commonwealth through VDOT has received approximately \$6.7 million in federal funds under Section 1103(f) since 1993 for its portion of the designated Southeast High-Speed Corridor. These funds have been used to install lights, gates and constant warning time devices at 36 crossings, construct a pedestrian overpass over the high speed corridor in Prince William County and support design and construction of three grade separations completed with Section 148 funds.

Under the FHWA Section 148 Highway Safety Improvement Program (HSIP), the Commonwealth receives \$4.4 million per year for highway-rail grade crossing safety projects. These Section 148 funds are not restricted to passenger rail lines, but can be

used for freight rail crossings as well. By designating additional federal safety funds for railroads, VDOT has been able to complete between 15 and 40 projects per year. Support is also provided for grade separations that will be paid for by other funds. Closures of existing at-grade crossings are made where possible under this funding program.

A recent rail safety project example is the Commonwealth Railway Mainline Safety Relocation project currently under construction and scheduled for completion by the end of 2009. The project consists of relocating approximately 4.5 miles of existing shortline rail tracks (Commonwealth Railway) to the medians of the Western Freeway (Route 164 and I-664) through Portsmouth, Chesapeake and Suffolk. In the early 1980s, both roadways were built to accommodate a dual set of rail tracks within their medians. This rail-ready corridor will be used to serve both the planned Craney Island Marine Terminal and the recently completed Maersk APM Terminal. Rail traffic from these two facilities is expected to exceed one million TEUs annually. As shown in **Figure 3-22**, relocation of the existing rail line to the Route 164/I-664 Median Rail-Ready Corridor will:

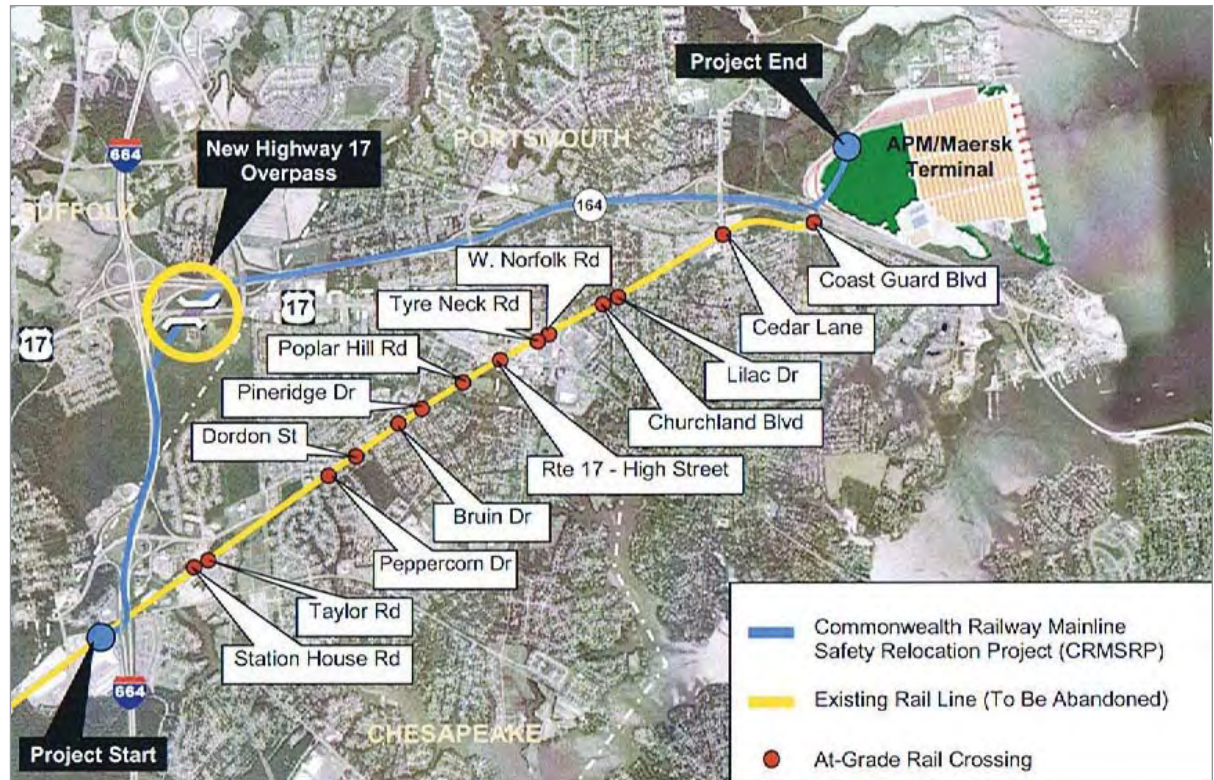
- Move the rail line away from densely populated areas of Chesapeake and Portsmouth, to a secure, guard-rail protected rail corridor away from pedestrian and motorist traffic.
- Eliminate the potential for rail-related accidents at the 14 at-grade crossings currently used by motorists and pedestrians.

- Limit the noise levels and pollution emissions from automobiles idling at railroad crossings as well as from trains passing through the neighborhoods in the vicinity of the existing lines.
- Divert containerized cargo traffic away from regional highways, thereby reducing highway congestion and improving highway safety.

As the number and frequency of trains continue to increase in Virginia, concern has been raised by municipalities and communities where past land use decisions have allowed residential neighborhoods to be built near mainline rail tracks and where crossing of rail tracks by automobiles is an accepted practice to access main highways.

A recent study by the Hampton Roads Planning District Commission identified a number of at-grade crossings in the Suffolk area where communities have been adversely impacted by the increase in the number of trains carrying coal and intermodal cargo. Where significant impacts occur, VDOT serves as the Commonwealth's agency with the responsibility to evaluate the need for crossing improvements or the elimination of the crossing by constructing a grade separating bridge to carry the highway over the existing rail tracks.

Figure 3-22
COMMONWEALTH RAILWAY MAINLINE SAFETY RELOCATION



Chapter 4

Potential Improvements to the Rail System

Based on current conditions and anticipated trends, this chapter presents potential rail investments in the Commonwealth. They are presented in four categories:

- Class I and Shortline Railroad Improvements, including the Norfolk Southern Heartland Corridor and CSX National Gateway Corridor
- Rail Improvements to Virginia Ports
- Passenger Rail Improvements for VRE and Amtrak
- Southeast High-Speed Rail

Figure 4-1 shows the location of these improvements throughout the Commonwealth.

All improvements address one or more of the following:

- Reducing passenger car and truck freight traffic to alleviate highway congestion, reduce energy demands and reduce pollutants
- Increasing freight capacity throughout the Commonwealth to support greater demand for freight rail shipping, growth in the coal industry and improved capacity at Virginia's ports

- Improving passenger rail by enhancing system performance and adding capacity

The total rail needs identified also provide the foundation for a six year funding plan, which in turn supports the long-range vision for rail in Virginia through the 2035 planning horizon.

Methodology

Rail improvement needs have been identified by the Commonwealth through previous and ongoing major investment studies, including:

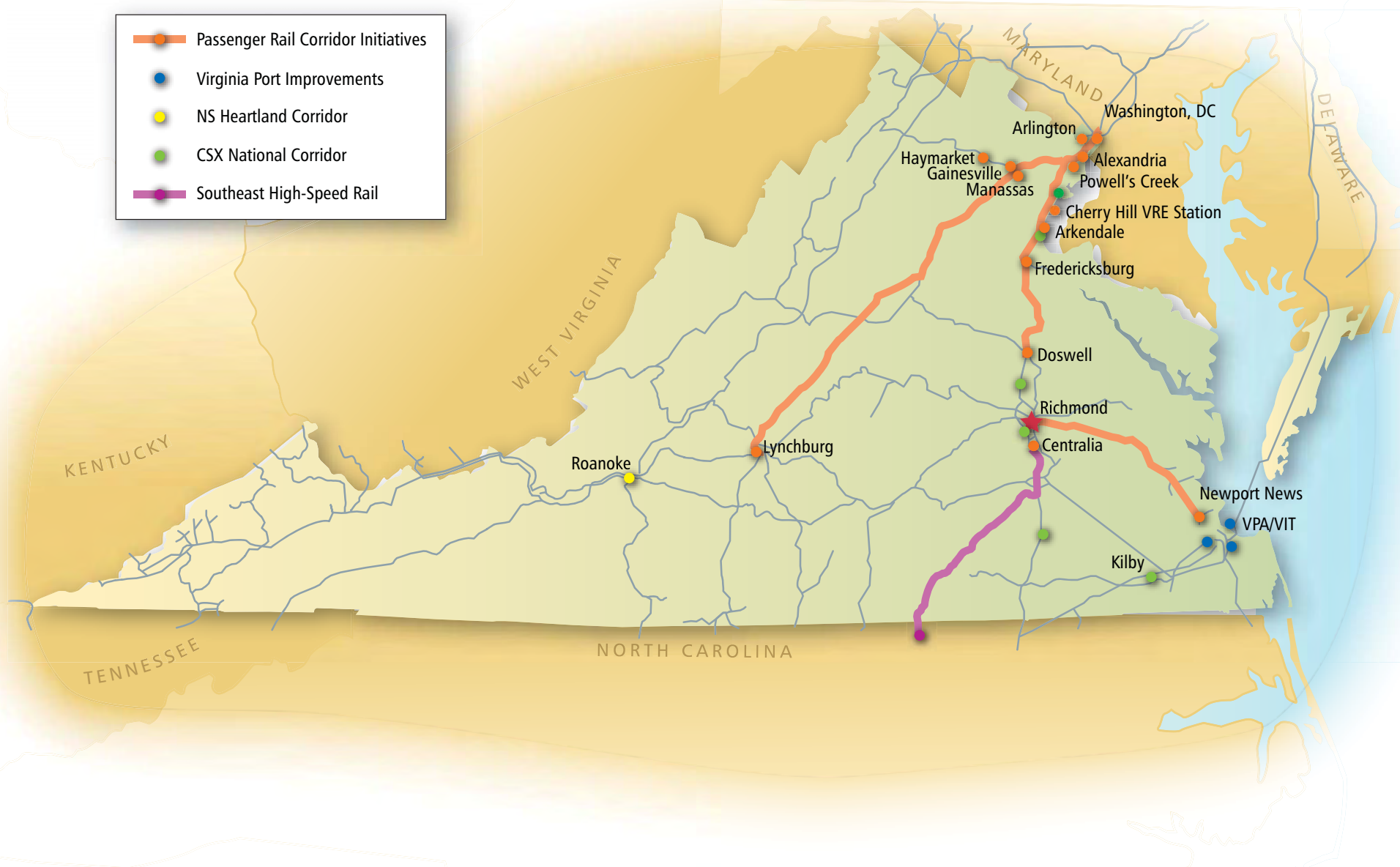
- I-95 Corridor Coalition: Mid-Atlantic Rail Operations Study - MAROPS Phase I (2002)
- Southeast High Speed Rail Corridor – Tier I Environmental Impact Statement (2002)
- The Northeast – Southwest – Midwest Corridor Marketing Study (2003)
- Governor's Commission on Rail Enhancement for the 21st Century Report (2004)
- Washington, DC to Richmond Third Track Feasibility Study (2006)

- TransDominion Express (TDX) Update Report (2007)
- I-81 Corridor Improvement Study Tier I Final Environmental Impact Statement (2007)
- Roanoke Region Intermodal Facility Summary Report (2008)
- Opportunities for Truck to Rail Diversion in Virginia's I-81 Corridor (Ongoing)
- Southeast High Speed Rail Corridor Tier II EIS (Ongoing)
- Richmond/Hampton Roads Passenger Rail Tier I Environmental Impact Statement (Ongoing)
- Richmond Area Rail Improvement Project Environmental Assessment (Ongoing)

Summaries of the above reports and studies are available on the DRPT website at <http://www.drpt.virginia.gov>. Also reviewed were strategic plans developed by the Virginia Port Authority, Amtrak, VRE, the Heartland Corridor Initiative and DRPT's Public Transportation and Transportation Demand Management (TDM) plan.

Figure 4-1
POTENTIAL RAIL INVESTMENT LOCATIONS

- Passenger Rail Corridor Initiatives
- Virginia Port Improvements
- NS Heartland Corridor
- CSX National Corridor
- Southeast High-Speed Rail



The freight railroads are private, for-profit businesses and, in accordance with federal policies concerning competitiveness, do not release certain information. The Statewide Rail Plan provides general information about Class I freight rail improvement projects. Project cost estimates for Norfolk Southern and CSX have been provided by the respective railroads and are being evaluated by the Commonwealth.

In the case of shortline railroads, DRPT assisted in the development of cost estimates for future capital needs and projects. For passenger rail projects, DRPT and North Carolina are conducting separate but coordinated detailed planning and engineering analysis that, while not yet complete, provides the best estimate of costs to date.

Due to market uncertainties and significant recent cost increases associated with railroad construction, these are conservative cost estimates. It is the Commonwealth's standard practice to execute project agreements with the railroads that allocate 100 percent of the risk of cost escalation to the private sector in delivering capital projects. Any rail project that receives public funding from the Commonwealth must represent the best value for the taxpayer's dollar and procurement of design and construction services must be in accordance with Commonwealth policies. This requires the bidding of construction contracts to insure competitiveness and opportunities for small, woman and minority owned businesses (SWaM) to participate.

The cost estimates are in 2008 dollars unless otherwise noted. Cost estimates include capital costs only. No operating or equipment costs are included; they will be identified in the State Action Rail Plan.

In the information that follows, project needs are presented in two ways: 1) as part of major Commonwealth transportation that serves corridor initiatives for multimodal networks in accordance with Virginia's long range transportation plan; and 2) as an industry project associated with the Class I railroads (Norfolk Southern and CSX), the 10 shortline railroads, passenger rail operators (Amtrak and VRE) and the Ports of Hampton Roads. Due to their significant impact on rail traffic and potential economic development in connecting Virginia to global markets, the ports were considered as a separate category in determining rail improvement needs.

Corridor improvements are those projects within identified transportation corridors that will increase the freight shipments to and from ports, improve commuter and intercity rail within regions of the Commonwealth and other freight improvement projects identified by Class I and shortline railroads in Virginia. The total cost for all rail transportation corridor improvements is approximately \$5 billion using the upper end cost estimates for projects that are presented within a range. This total cost represents an average annual expense of approximately \$185 million for the 27-year period beginning 2009 through 2035. All costs are stated in 2008 dollars without escalation to potential year of expenditure.

The total cost estimate includes long term rail needs that contain significant public benefits associated with improving passenger rail, reducing highway congestion and fostering economic development. Some needs could be met within current state funding streams consistent with the development of the Six Year Improvement Plan. These projects will represent the short-term needs that will be identified in the Rail Action Plan, with all or some portion of the remaining projects to be programmed into the 2035 long range plan based on public benefits and available funding. This document does not address the allocation of costs among public (federal, state, local) and private potential project partners. The allocation of costs will also be determined through the State Rail Action Plan, scheduled for publication in fall 2008.

Class I and Shortline Railroads

The projects described in this section total \$1.8 billion for both Class I and shortline railroads.

Class I and Shortline Railroad Project Costs	
Project	Costs
NS Class I	\$ 1.7 billion
CSX Class I	\$ 48.0 million
Shortline Railroad	\$ 68.0 million
Total Costs	\$ 1.8 billion

CSX National Gateway Corridor (I-95, I-295 and I-495)

Project Cost: \$ 48 million

Freight rail improvements on the CSX multi-state National Gateway (I-95) Corridor are shown in Figure 4-2.

The National Gateway project is designed to improve the efficiency of freight rail shipping for the Mid-Atlantic ports of Baltimore, MD, Virginia, and Wilmington, NC and the markets in Pennsylvania, West Virginia, Ohio and other Midwestern states. The project extends through six states and the District of Columbia and consists of approximately \$700 million in projects to expand capacity and provide clearance for double-stack intermodal trains, improving the flow of international and domestic freight between these regions. Included in the National Gateway are the expansion of several existing intermodal facilities and construction of new facilities to manage current and projected demand for freight movement along the corridor. At CSX’s request, Cambridge Systematics conducted a cost benefit analysis for the project and estimates that the diversion of truck traffic to rail will range from 186,000 (moderate scenario) to 375,000 truckload equivalents (aggressive scenario) on an annual basis if the improvements are implemented.

Virginia’s portion of the CSX National Gateway improvements is estimated at \$48 million. The CSX proposal for National Gateway improvements assumes federal participation in funding the projects and the Virginia share of \$48 million is net after federal funds. Virginia projects include five double-

stack clearance projects, construction of a rail yard and funding to support clearance of the Virginia Avenue Tunnel in Washington, DC Some rail improvements within the National Gateway corridor in Virginia provide dual benefits to improve passenger and freight rail operations in categories such as on-time performance by separating passenger and freight rail operations in congested areas.

Annual Benefits for Virginia



Removes 130,000 trucks from I-95 corridor



Saves over 31.9 million gallons of fuel



Saves 61,705 tons of CO₂ emissions

Project Status

CSX National Gateway Corridor Project Development Status	
Task	Proposed Completion Dates
Planning and Analysis	2008
Preliminary Engineering	2009
Final Design	2010
Construction	2013
Operation	2013

Partnership Opportunities

The CSX National Gateway Corridor project will require a federal, multi-state and private partnership given the project's potential benefits of supporting increased passenger and freight rail operations along the I-95 Corridor. The public benefit analysis included all of CSX's proposed projects for the multi-state initiative, including the cost of the Virginia Avenue Tunnel. In order to advance the project in Virginia, the Commonwealth and CSX will have to reach an agreement on project scope, costs and allocation of costs between partners.

Figure 4-2

CSX NATIONAL GATEWAY CORRIDOR IMPROVEMENT LOCATIONS



Norfolk Southern Crescent Corridor Initiative (I-81, I-20, I-40, I-75 and I-85)

Project Cost: \$1.6 billion

The multi-state Crescent Corridor extends from New Orleans, LA to New Jersey. The Virginia portion is shown in **Figure 4-3**. The Crescent Corridor project is designed to improve the efficiency of freight rail shipping along the following significant and congested highways: I-20, I-40, I-75, I-85 and I-81.

The Norfolk Southern Crescent Corridor in Virginia extends along I-81 from the West Virginia border in the north to the Tennessee border in the south, from Washington, DC to Front Royal along the I-66 Corridor and from Manassas to Danville along the Route 29 Corridor. Norfolk Southern's intermodal trains on the Route 29 Corridor travel primarily north and south from Atlanta, GA and Charlotte, NC to Harrisburg, PA. Intermodal trains following the I-81 corridor travel primarily north and south from the Gulf coast and the Knoxville, TN and Birmingham, AL areas. Norfolk Southern also connects with major intermodal carriers at Memphis, TN and Shreveport, LA via the Kansas City Southern Railway. The success of truck diversion on the Crescent Corridor depends on a multi-state initiative involving an array of federal, state, local and private partners.

The corridor has two distinct rail lines in Virginia that parallel I-81. They will be improved to increase rail capacity. This additional capacity will enhance rail operations so that more trucks can be diverted from the heavily traveled I-81 corridor. About a third of I-81 Crescent Corridor traffic flows between terminals in Tennessee and the Northeast. These trains will

utilize the Shenandoah Route, which will require additional capacity in FY2009 and future years.

The total project cost is estimated between \$2 and \$3 billion, approximately \$1.6 billion of which is in Virginia. Upon completion, the project will divert between 1.2 and two million trucks from highways each year by 2035. The Virginia scope of projects focuses on improving operating speeds and reliability to support up to 28 additional trains per day. There are 39 individual projects identified in Virginia on the Crescent Corridor that will primarily expand single mainline tracks to double tracks, add passing sidings and expand passing sidings. The passing siding extensions will allow longer, modern trains to meet and pass other trains within the corridor. The double track segments are primarily fill-in segments to connect existing passing sidings. Other projects involve curve realignments to improve operating speeds, connection improvements to improve the efficiency of freight movements between line segments, additional track switches and new signal systems.

The Commonwealth invested \$40 million in 2007 to support improvements between Manassas and Front Royal. Funding for that project requires Norfolk Southern to haul a minimum of 40,000 additional TEUs annually. All Crescent Corridor projects in Virginia are being analyzed as part of a larger statewide freight study and will be finalized in late summer/fall 2008. The construction schedule for the Crescent Corridor improvements within Virginia includes two phases, from 2009 to 2012 and from 2013 to 2020 that total approximately \$830 million.

There are additional rail improvements within the Crescent Corridor in Virginia that will provide dual benefits to improve passenger and freight rail. There is an opportunity to expand VRE commuter rail service along the I-66 corridor from Manassas to Haymarket and to expand Amtrak intercity rail along the Route 29 corridor to serve Charlottesville, Lynchburg, Roanoke and Bristol. These improvements include estimated costs to support passenger rail operations between Lynchburg and Alexandria. The passenger rail projects are discussed separately in this chapter but will be a key consideration in the Commonwealth's discussions with Norfolk Southern regarding the Crescent Corridor Initiative.

Annual Benefits for Crescent Corridor in Virginia



Removes 1.6 million (base estimate) trucks from the I-81 corridor by 2035



Saves over 227 million gallons of fuel



Saves 674,000 tons of CO₂ emissions

Project Status

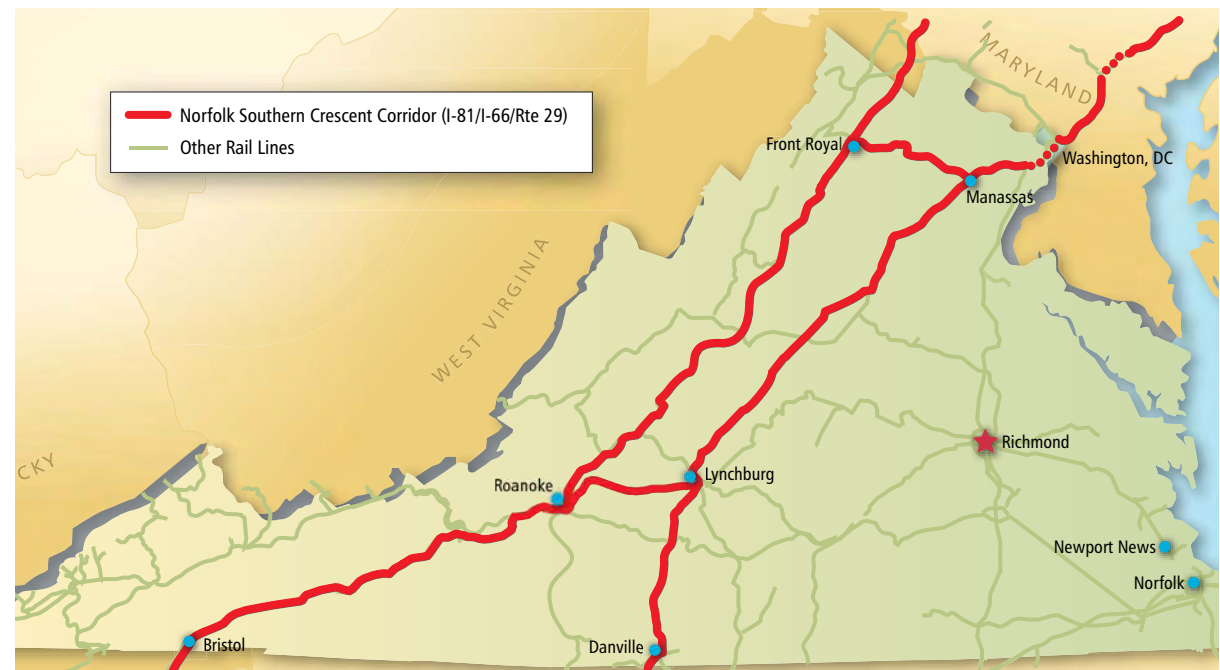
Norfolk Southern Crescent Corridor Initiative Development Status	
Task	Proposed Completion Dates
Planning and Analysis	2008
Preliminary Engineering	2008
Final Design	2009
Construction	2010
Operation	2020

Partnership Opportunities

The Crescent Corridor project will represent an opportunity for a federal, multi-state and private partnership, given the project's potential benefits of supporting increased passenger and freight operations along the I-81 corridor and other major corridors outside of Virginia. The public benefits of this project are being further defined in the I-81 Freight Rail Study analysis, to be completed in summer/fall 2008. The proposed projects in Virginia result in truck diversion benefits from the implementation of a multi-state freight rail initiative. The Commonwealth and Norfolk Southern will have to reach an agreement on project scope, costs and the allocation of costs between partners that will support improvements for both passenger and freight rail.

Figure 4-3

NORFOLK SOUTHERN CRESCENT CORRIDOR INITIATIVE



Norfolk Southern Heartland Corridor
(Route 460) Project Cost: \$ 66.01 million

The Heartland Corridor initiative is a federally designated “project of national significance” and is being constructed by Norfolk Southern with support from the Federal Highway Administration, Eastern Federal Lands Highway Division, the Commonwealth of Virginia and the states of West Virginia and Ohio. The total cost of the Heartland Corridor Initiative is approximately \$249 million, not including approximately \$59.55 million for the Commonwealth Median Rail Safety Relocation Project. Improvements include \$160 million for tunnel clearances in Virginia to Columbus, OH and the construction of three intermodal facilities along the corridor. *Figure 4-4* illustrates the Heartland Corridor.

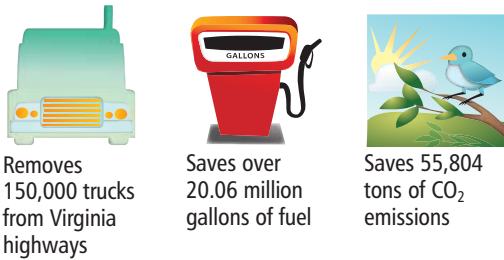
The Heartland Corridor will double freight rail capacity along the line that parallels Route 460 through Virginia and significantly improve the freight shipping time to markets in the Midwest. The project includes raising tunnel clearances and the development of intermodal facilities in the Roanoke region, Prichard, WV and Rickenbacker, OH. The project will increase capacity and save 1.5 days over the current shipping time between Hampton Roads and Chicago, IL. The Heartland Corridor in Virginia is comprised of the Norfolk Southern mainlines from the Port of Hampton Roads across the southern half of the state through Petersburg and Roanoke and on to Bluefield, roughly paralleling Route 460. Coal, intermodal and merchandise trains use the Route 460 Corridor. In addition, Norfolk Southern, DRPT and Amtrak are exploring the possibility of new passenger rail service between Alexandria and Bristol

that will use part of this corridor from Lynchburg to Walton, near Blacksburg.

To date, the Commonwealth has committed \$22.35 million towards the Virginia projects. Work is underway to raise the height of four tunnels in Virginia to support double-stack operations. The location of an intermodal facility in Virginia is being discussed and the scope of the project may potentially be expanded to support improved access to the facility if this element of the project advances. The advancement of the intermodal facility will require an additional \$6.3 million for access improvements.

As an addition to the initial Heartland Corridor project, Norfolk Southern has begun to identify Phase 2 projects, including the development of a parallel double-stack route from Altavista to Roanoke, clearance of the Montgomery Tunnel mainline, track capacity improvements near Farmville and the City of Suffolk and the development of an intermodal facility in Prince George County. These proposed Phase 2 projects total \$59.71 million. DRPT will continue to work with Norfolk Southern to evaluate these proposed projects for potential future funding.

Phase I Project Annual Benefits funded



Phase 1 Project Status

Norfolk Southern Heartland Corridor Development Status - Phase 1	
Task	Proposed Completion Dates
Planning and Analysis	2006
Preliminary Engineering	2007
Final Design	2007
Construction	2009
Operation	2009

Phase II Project Annual Benefits funded



Removes
45,000 trucks
per year from
Virginia
highways



Saves over 3.19
million gallons
of fuel



Saves 4,473
tons of CO₂
emissions

Phase 2 Project Status

Norfolk Southern Heartland Corridor Development Status - Phase 2

Task	Proposed Completion Dates
Planning and Analysis	2009
Preliminary Engineering	2009
Final Design	2010
Construction	2011
Operation	2012

Partnership Opportunities

A public private partnership has been executed to support Phase 1 of the project, which was designated as a project of national significance. The Phase 2 project proposal is under review. The Commonwealth and Norfolk Southern will have to reach an agreement on project scope, costs and the allocation of costs between partners that will support improvements for both passenger and freight rail.

Figure 4-4

NORFOLK SOUTHERN HEARTLAND CORRIDOR LOCATION



Norfolk Southern Coal Corridor (Route 460)

Project Cost: \$ 12.1 million

Freight railroads with sufficient capacity enable companies in the Commonwealth to conduct business efficiently and effectively. A strong transportation network is vital to Virginia's economic vitality. Recent changes in the global market, from the value of the U.S. dollar to consumption by China of coal and steel, have resulted in an enhanced opportunity for U.S. coal producers. Virginia coal is generally high in quality with high energy and low sulfur content, an ideal combination for electricity generation. Hampton Roads is the nation's largest coal port. **Figure 4-5** shows the Norfolk Southern Coal Corridor route.

Coal shipments through Hampton Roads are projected to increase 48 percent in 2008, from 28.3 million to 42 million tons per year. The majority of Virginia coal is shipped from mine to market by railroad. It is estimated that over 90 percent of Virginia's coal production is hauled to market by Norfolk Southern. A significant portion of the utility coal produced in southeast Virginia is shipped to generating stations in Tennessee, the Carolinas and Georgia. Norfolk Southern has submitted total needs of \$12.1 million to support improved movement of coal along the Route 460 corridor. The project scope focuses primarily on adding additional track for capacity purposes. Given that coal is mostly moved by freight rail, there is no opportunity for truck diversion. Accordingly, this project will only receive state funding to the degree that it provides a dual benefit for passenger rail. Along the corridor that is represented in **Figure 4-5**, passenger rail

opportunities related to the TransDominion Express represent an opportunity for a public private partnership.

Annual Benefits

There are no truck to rail diversion opportunities associated with this project. Accordingly, no benefits have been calculated. The potential benefits to passenger rail as part of the TransDominion Express initiative are being evaluated.

Partnership Opportunities

The Coal Corridor project will represent a potential public private partnership between the Commonwealth and Norfolk Southern to support both freight and passenger rail.

Project Status

Norfolk Southern Coal Corridor Development Status

Task	Proposed Completion Dates
Planning and Analysis	2006
Preliminary Engineering	2007
Final Design	2007
Construction	2009
Operation	2009

Figure 4-5

NORFOLK SOUTHERN COAL CORRIDOR LOCATION





A huge surge in demand for coal is benefiting Virginia's economy.

Shortline Railroad Preservation (Statewide)
Project Cost: \$ 67.8 million

The Commonwealth has determined that it is in the public interest for shortline railways to be maintained due to the value that they deliver for Virginia businesses and for passenger rail service. Shortline railroads connect commercial and industrial business to Class I railroads and, in the case of the Buckingham Branch Railroad, serve as the host railroad for Amtrak service. An important need identified for Virginia’s shortline rail network is to improve all railroads to meet Federal Railroad Administration Class 2 track standards for freight and Class 4 track standards for passenger trains. It is estimated that the projects necessary to bring all of Virginia’s shortline railroads into conformance with

Figure 4-6
SHORTLINE RAILROAD COST FOR SYSTEM IMPROVEMENTS

Shortline Railroad	Amount (\$)
Bay Coast Railroad	\$5,107,000
Buckingham Branch Railroad	\$34,534,000
Chesapeake & Albemarle Railroad	\$5,702,000
Chesapeake Western Railroad	\$3,294,000
Commonwealth Railway, Inc.	\$1,622,000
Deepwater Terminal Railroad	\$491,000
Norfolk & Portsmouth Belt Line	\$3,321,000
North Carolina & Virginia Railroad	\$338,000
Shenandoah Valley Railroad	\$2,110,000
Virginia Southern Railroad	\$7,490,000
Winchester & Western Railroad Co.	<u>\$3,819,000</u>
TOTAL	\$67,828,000

Figure 4-7
SHORTLINE RAILROAD LOCATIONS



these track standards will cost \$68 million over the next 20 years. *Figure 4-6* illustrates needs by each shortline railroad. It should be noted that there may be other needs associated with bridges that have not yet been fully evaluated.

Figure 4-7 shows the shortline railroads in Virginia. Shortline railroad improvements are primarily funded through the Commonwealth’s Rail Preservation Fund Program.

Figure 4-8 shows the services of the shortline railroads by commodity to Virginia’s economy. The Rail Preservation program assists in moving over 613,000 annual railcars and removing over 2.14 million trucks off of Virginia’s highways.

Figure 4-8

SHORTLINE RAILROADS – SUMMARY OF ANNUAL CARLOADS (2007)

COMMODITY	Bay Coast Railroad	Buckingham Branch Railroad	Chesapeake & Albemarle Railroad	Chesapeake Western Railroad	Commonwealth Railway, Inc. *	Norfolk & Portsmouth Belt Line	North Carolina & Virginia Railroad	Shenandoah Valley Railroad	Virginia Southern Railroad	Winchester & Western Railroad Co.	Deepwater Terminal Railroad **
Base Metals							X			X	X
Milled Grain Products	X	X	X	X		X	X	X			
Gravel and Crushed Stone	X		X							X	X
Plastic and Rubber		X					X			X	X
Wood Products	X	X	X				X	X	X		X
Waste and Scrap							X	X			X
Misc. Manufactured Products			X								X
Nonmetallic Minerals		X				X					
Paper	X	X					X		X	X	X
Basic Chemicals	X				X		X		X		X
Transportation Equipment	X										X
Metallic Ore & Concentrates		X									
Machinery							X				X
Cargo – Not Otherwise Specified	X	X	X		X	X	X	X	X	X	X
TOTALS	1,909	542,888	6,329	N/A	839	25,841	23,974	1,305	3,878	6,277	393

* Does not include containerized cargo from the new Maersk APM Terminal in Portsmouth which opened in late 2007 and will generate many new carloads in the future (as will the future VPA Craney Island Marine Terminal to open in 2017). ** DWT is not classified by FRA.

Partnership Opportunities

Improvements to the shortline railroad system will require a public private partnership between the Commonwealth and the shortline operators. The shortline railroads are required to achieve specific performance goals for truckload equivalents hauled, maintain rail improvements supported by the Commonwealth and provide a minimum match of 30 percent of the total project cost.

Ports of Hampton Roads (I-64, I-95 and Route 460)

Improving rail capacity at the Ports of Hampton Roads supports increased truck to rail diversion and provides economic benefit to the Commonwealth by reducing transportation costs for both domestic and international trade. The projects described in this section total \$179 million.

Ports of Hampton Roads Project Costs	
Project	Costs
NIT Central Rail Yard Expansion	\$ 40.15 million
Craney Island Rail Connection	\$ 130.00 million
Norfolk/Portsmouth Beltline Railroad	<u>\$ 8.75 million</u>
Total Costs	\$ 178.90 million

NIT Central Rail Yard Expansion


Project Cost: \$40,146,000

The Virginia Port Authority/Virginia International Terminals Norfolk International Terminals (NIT) Central Rail Yard Expansion project will divert truck shipments to rail. **Figure 4-9** shows an aerial view of site improvements. The NIT project is a two-phase, \$40 million rail intermodal yard expansion project to be completed over a four-year period. On-terminal rail handling capacity will be increased from 165,140 containers per year to nearly double today’s capacity. The project will expand NIT’s on-dock intermodal rail yard capacity through construction of an additional 24,000 feet of railroad track, ties and ballast, several switches, heavy-duty pavement in the rail yard area, container handling areas and associated civil/site/utility and electrical infrastructure.


Currently, NIT moves about 30 percent of its containers by rail. This project will double the terminal rail yard and container trans-loading facility capacity, allowing NIT to expand its market reach in the Midwest. The NIT Central Yard Expansion is being developed similarly to the Maersk APM Terminal port development project, with essential on-terminal rail facilities and an off-site rail marshalling yard to permit maximum fluidity of train operations to and from the serving railroad.

Figure 4-10 shows the estimated truckload equivalents removed over 15 years.


Annual Benefits



Removes 180,310 trucks from Virginia’s highways



Saves over 24.3 million gallons of fuel



Saves 47,072 tons of CO₂ emissions

Project Status

NIT Central Rail Yard Expansion Development Status	
Task	Proposed Completion Dates
Planning and Analysis	Complete
Preliminary Engineering	Complete
Final Design	Summer 2009
Construction	Summer 2009
Operation	Fall 2010

Partnership Opportunities

The NIT Central Rail Yard Expansion project will require a public private partnership between the Commonwealth and Virginia International Terminals, a non-profit terminal operating company that is a subsidiary of the Virginia Port Authority (VPA). Any agreement executed with VPA will incorporate container growth and performance requirements over time.

Figure 4-9
AERIAL VIEW OF NIT CENTRAL YARD IMPROVEMENTS



Figure 4-10
ESTIMATED TEU REMOVAL

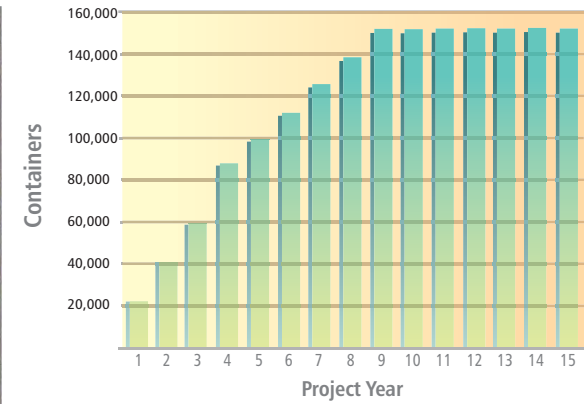
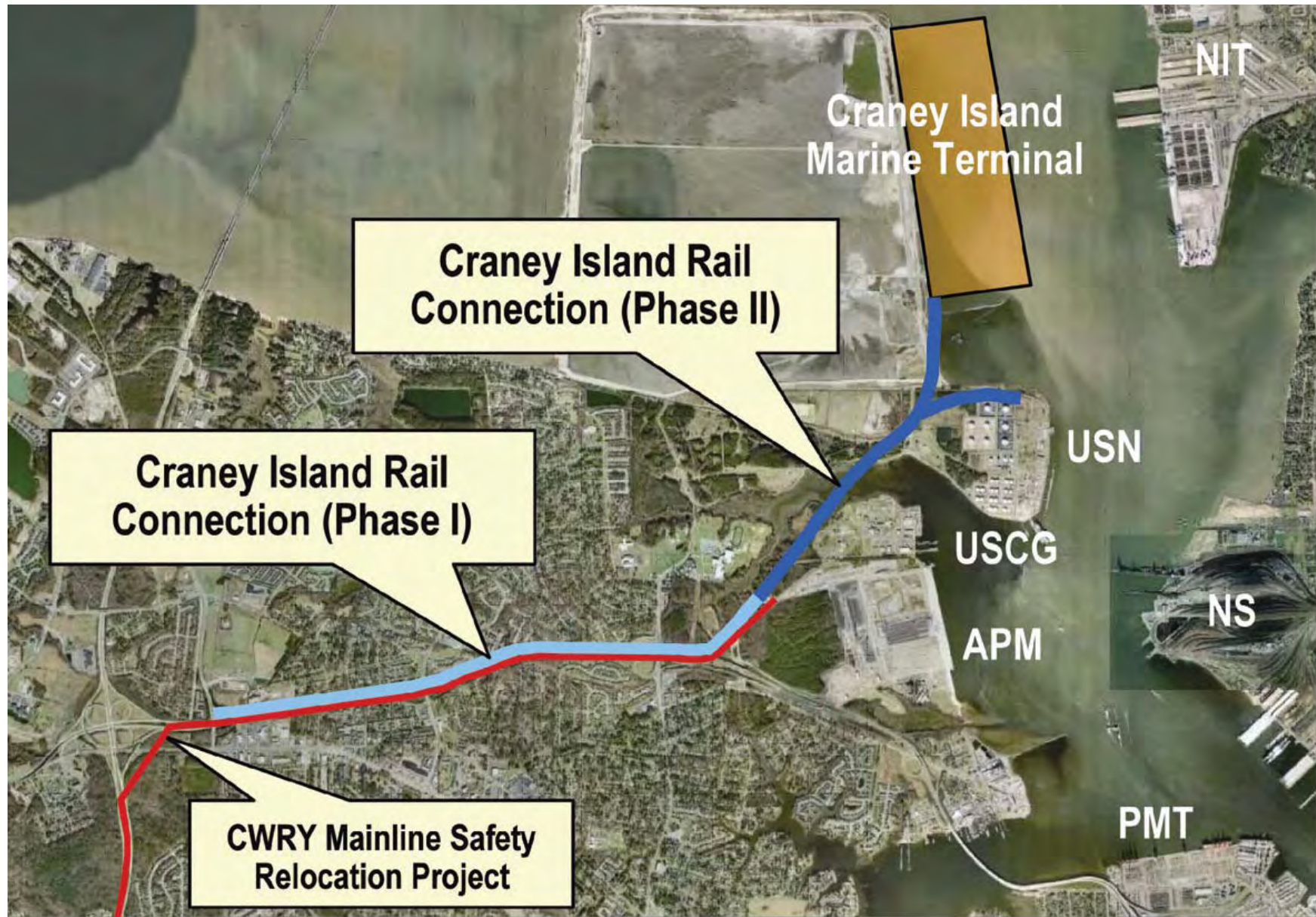


Figure 4-11

CRANEY ISLAND PROJECT IMPROVEMENTS



Craney Island Rail Connection

Project Cost: \$130,000,000

This project builds upon the I-664/Route 164 Median Rail Safety Relocation Project that constructed a single track rail line in the median of I-664/Route 164 between Pughsville Road and Coast Guard Boulevard in the City of Suffolk, City of Chesapeake and City of Portsmouth area. The Craney Island Marine Terminal (CIMT) is being developed to transport approximately 50 percent of a projected 1.43 million containers by rail through this major new facility along the Elizabeth River in the City of Portsmouth. Phase I includes the construction of a long siding track in the median of Route 164 from the Route 17 highway overpass bridge to the Maersk APM Terminal track interface alongside of Coast Guard Boulevard. Phase II includes the planning and design of a new track connection between the Maersk APM Terminal and the CIMT on-dock intermodal yard. *Figure 4-11* shows project improvements. Phase III includes the construction of a new rail connector and intermodal facility at CIMT.

The cost estimate and scope for this project may change since the project is in the early stages of development. As the project progresses, costs will be further delineated to support only rail improvements, which will serve as the basis for the potential execution of an agreement.

Figure 4-12 shows the estimated TEUs removed over the 15-year project horizon.

Annual Benefits



Removes 848,571 trucks from Virginia's highways



Saves over 114 million gallons of fuel



Saves 221,528 tons of CO₂ emissions

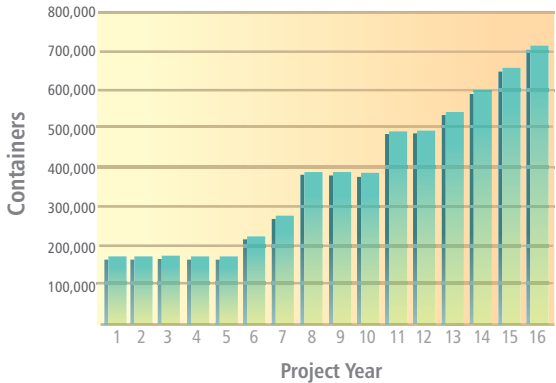
Partnership Opportunities

The Craney Island Rail Connection project will require a public private partnership between the Commonwealth and Virginia International Terminals, a non-profit terminal operating company that is a subsidiary of the VPA. Any agreement executed with VPA will incorporate truck diversion and other performance requirements over time.

Project Status

Craney Island Rail Connection Development Status	
Task	Proposed Completion Dates
Planning and Analysis	2010
Preliminary Engineering	2010
Final Design	2011
Construction	2013
Operation	2017

Figure 4-12
ESTIMATED TEU REMOVAL




**Norfolk Portsmouth Belt Line Railroad
Improvements Project Cost: \$8.75 million**

This project is connected to the Central Rail Yard Expansion of the Virginia Port Authority’s Norfolk International Terminals (NIT). NIT moves approximately 30 percent of its containers by rail and this project will be developed in conjunction with improvements to train operations and grade crossing safety at the Hampton Boulevard at-grade crossing at the Main Gate of NIT. Similar to the Maersk APM Terminal rail operating plan of assembling outbound trains and disassembling inbound trains at an off-terminal marshalling yard, VPA will be able to accept and assemble long intermodal trains, disassemble them into pieces for on- and off-terminal movements and cross Hampton Boulevard on the VDOT proposed railroad overpass.

The off-site marshalling yard will separate highway traffic from train movements while improving the operating efficiency of train movements to and from the on-terminal rail yard. Through this project, VPA is proposing to improve an existing retired rail yard located near the Back Gate of NIT. VPA is acquiring approximately 33.5 acres of the existing Norfolk Portsmouth Belt Line rail line and marshalling yard facilities adjacent to the NIT North Terminal. This project involves site improvements and the upgrade of 16,632 feet of track. *Figure 4-13* provides a site overview.

Annual Benefits

In the determination of project benefits, DRPT did not include the truck diversion benefit of the NIT Central Rail Yard project. As stated, the off-site marshalling yard will alleviate multiple train movements by separating highway traffic from train movements, while improving the operating efficiency of train movements to and from the on terminal rail yard. The new marshalling yard will take advantage of a new rail/highway grade separation project at Greenbrier Boulevard and Hampton Boulevard.



Eliminates 12,852 hours per year of delays (based on 18 train crossings per day) at an existing at-grade crossing at NIT and Hampton Boulevard.

Project Status

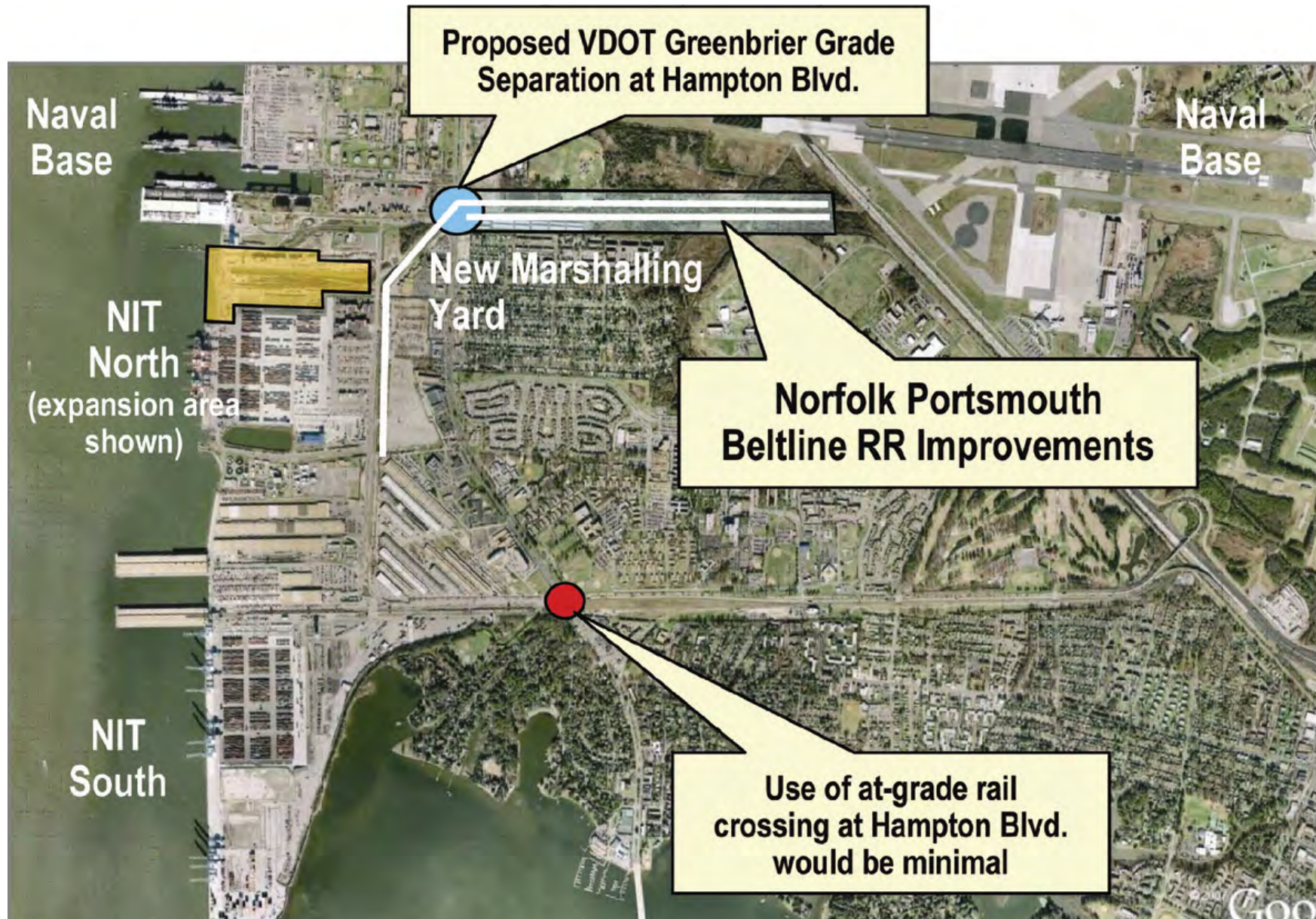
Norfolk Portsmouth Belt Line Railroad Development Status	
Task	Proposed Completion Dates
Planning and Analysis	Summer 2008
Preliminary Engineering	Fall 2008
Final Design	Summer 2009
Construction	Fall 2010
Operation	2011

Partnership Opportunities

The Norfolk Portsmouth Belt Line Railroad Improvements project will require a public private partnership between the Commonwealth and Virginia International Terminals, a non-profit terminal operating company that is a subsidiary of the VPA. Any agreement executed with VPA will incorporate truck diversion and other performance requirements over time.

Figure 4-13

NORFOLK PORTSMOUTH BELT LINE RAILROAD IMPROVEMENTS



Passenger Rail Corridor Initiatives

Passenger Rail Initiative Costs	
Project	Costs
Commuter Alexandria to Manassas	\$ 8.25 million
Commuter Gainesville to Haymarket	\$ 281.00 million
Commuter Fredericksburg to Washington, DC	\$ 470.00 million
Intercity Urban Crescent	\$757.00 million
Intercity TransDominion Express	\$206.00 million
Total Costs	\$ 1.7 billion

COMMUTER RAIL IMPROVEMENTS (I-66 and I-95)

Commuter rail improvement projects focus solely on VRE, the only commuter rail system operating in Virginia. Projects include a service expansion from Manassas to Haymarket, track upgrades between Alexandria and Manassas and track and infrastructure improvements between Fredericksburg and Washington, DC The projects described in this section total \$1.7 billion.

Manassas Line

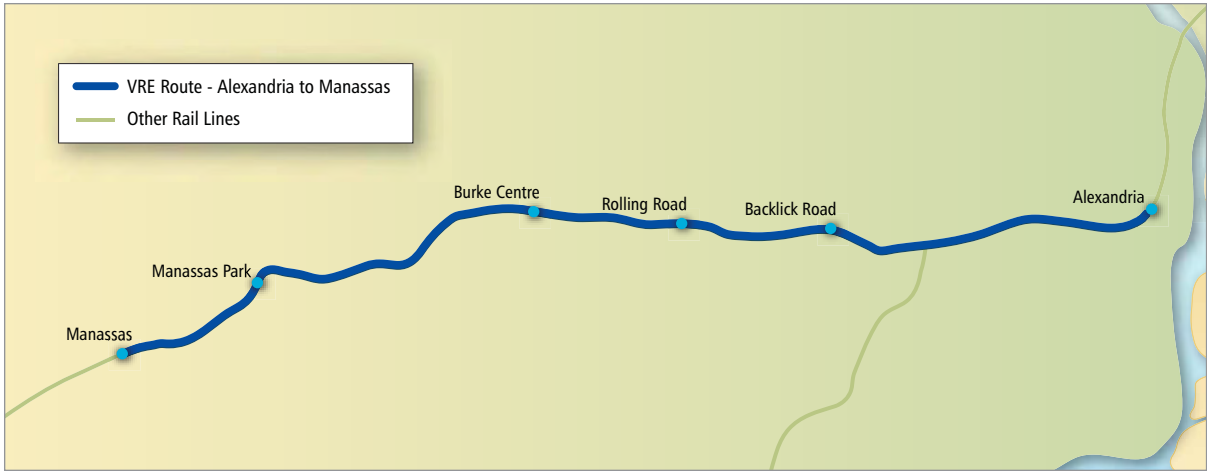
The VRE Manassas Line extends from Washington DC west to Alexandria and Manassas, roughly south of the I-66 and Route 29 Corridors. This commuter line primarily serves Prince William and Fairfax Counties, although commuters from counties further west also use these commuter lines for their daily commute to the Washington DC region.

Alexandria to Manassas (I-66)

Project Cost: \$ 8.253 million

VRE is the primary user of two Norfolk Southern mainline tracks between Alexandria and Manassas. Upgrades to this portion of track will support Class 4 rail track standards for continued passenger train use of the system. VRE commuter and Amtrak intercity trains both use this line section. Although this line section is also utilized for freight movements, the high standard of track conditions is necessary for continued efficient and dependable passenger train operations. Without these improvements, these tracks could degrade to Class 3, thus lowering the track speeds, impacting passenger train schedules and diminishing rider confidence in train reliability. Proposed projects along this line section include construction improvement costs, such as infrastructure rehabilitation, to allow for continued commuter and intercity train speeds at or above their current levels. Ultimately, improvements to this section of the rail system will also benefit system expansions in the I-81 and Route 29 corridors. *Figure 4-14* shows the route location. In a related project, the Alexandria to Lynchburg improvement project will provide switch improvements along this line section. Norfolk Southern has included the project costs in its Crescent Corridor project.

Figure 4-14
ALEXANDRIA TO MANASSAS ROUTE



Partnership Opportunities
The Alexandria to Manassas project will require a public private partnership between the Commonwealth, Norfolk Southern and VRE.

Annual Benefits *(combined with the Alexandria to Lynchburg Project)*



Removes 53,091 cars from Virginia roadways



Saves 164,637 gallons of fuel per year



Saves 983 tons CO₂ emission per year

Project Status

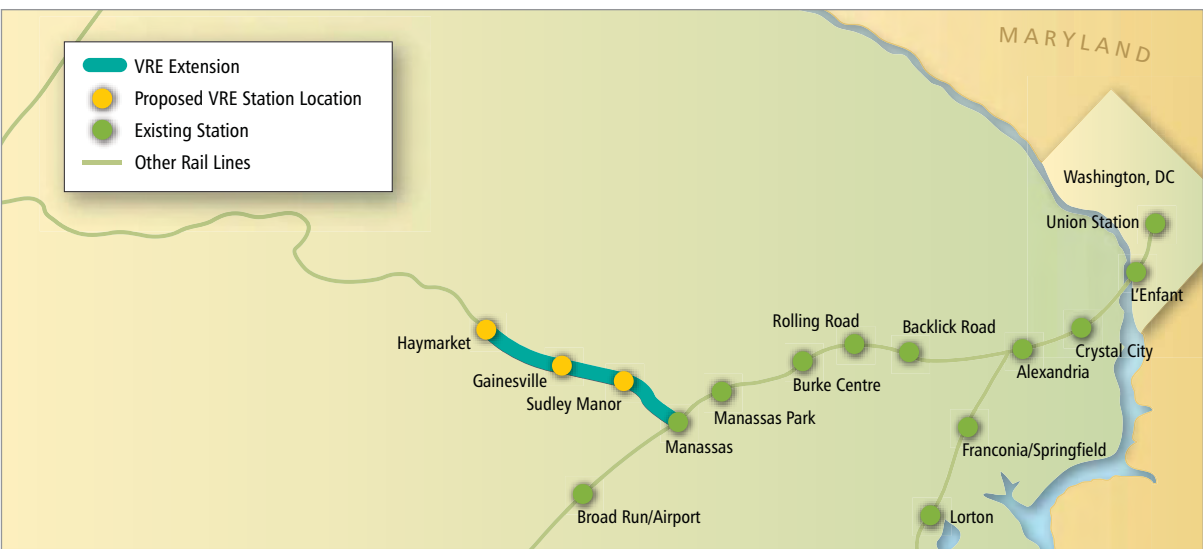
Alexandria to Manassas Route Development Status	
Task	Proposed Completion Dates
Planning and Analysis	N/A
Preliminary Engineering	N/A
Final Design	N/A
Construction	2009
Operation	2014

Gainesville to Haymarket VRE Expansion (I-66)
Project Cost: \$280.6 million

Population growth and commuter patterns continue to shift westward along the I-66 corridor. DRPT has provided Rail Enhancement funding to conduct a major investment study to determine the viability and potential locations of future passenger rail stations along the Norfolk Southern line section between the City of Manassas and Gainesville/Haymarket in Prince William County. Following the completion of this study, VRE and Norfolk Southern must work collaboratively to identify the infrastructure capacity improvements necessary for the expansion of VRE service and the successful co-existence of freight and passenger rail operations, currently and in the future. Unlike the other Norfolk Southern line sections utilized by VRE today, this line section is currently used exclusively for freight train service. It is a vital intermodal link between the Port of Hampton Roads, the Virginia Inland Port and the Crescent Corridor. This project will extend VRE commuter rail service over the 11.3 mile line section between the City of Manassas and Gainesville/Haymarket along the I-66 rail corridor, including the construction of three stations. Extensive upgrades to the existing line will make tracks suitable for passenger rail operations. The next step for this project includes additional environmental review and preliminary design. *Figure 4-15* shows the service expansion area.

The current project costs are generalized and represent high level planning estimates, since this project is in the early stages of development. Some of the project costs may overlap with costs for

Figure 4-15
GAINESVILLE TO HAYMARKET VRE EXPANSION ROUTE



freight rail improvements in the corridor. The Commonwealth, VRE and Norfolk Southern will work cooperatively to determine the appropriate distribution of project costs, given that the project is included in the same area for improvements associated with the Crescent Corridor.

Annual Benefits

Based on ridership projections, shown in *Figure 4-16*:



Removes
430,556 cars
from Virginia's
highway



Saves 1.7
million gallons
of fuel



Saves 7,756
tons of CO₂
emissions

Project Status

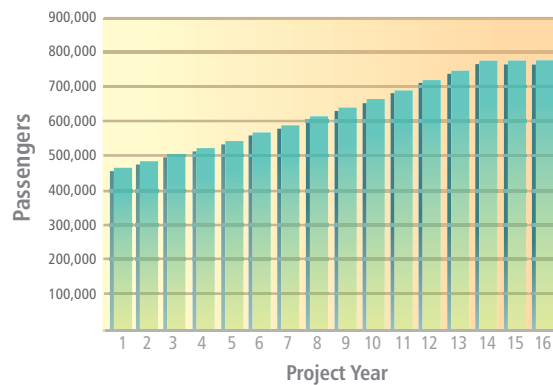
Gainesville to Haymarket VRE Expansion Development Status	
Task	Proposed Completion Dates
Planning and Analysis	Fall 2011
Preliminary Engineering	Fall 2011
Final Design	TBD
Construction	TBD
Operation	TBD

Partnership Opportunities

The Manassas to Gainesville/Haymarket VRE Expansion project will represent a public private partnership between the Commonwealth, Norfolk Southern, VRE and the private sector as it relates to the construction of capacity improvements and stations.

Figure 4-16

GAINESVILLE TO HAYMARKET ROUTE RIDERSHIP PROJECTIONS



Virginia Railway Express provides the equivalent capacity of one lane of traffic on I-95 and I-66 during peak travel periods in the Northern Virginia region.

Fredericksburg Line (I-95)

The VRE Fredericksburg Line extends from Washington DC south to Fredericksburg along the I-95 corridor. The CSX line section from Fredericksburg to Washington, DC is congested with freight, commuter and intercity passenger trains, all competing for limited track capacity. The VRE Fredericksburg line serves multiple counties and cities, including Fairfax, Prince William, Stafford, Spotsylvania and Fredericksburg. Improvements between Fredericksburg and Washington, DC support both the National Gateway freight and the Southeast High Speed Rail passenger rail passenger initiatives.

Fredericksburg to Washington, DC Improvements (I-95, I-395 and I-495)

Project Cost: \$ 470 million

In 1992, VRE began service on CSX tracks between Fredericksburg and Washington, DC In order to implement commuter rail service, VRE and the Commonwealth committed to constructing improvements at no cost to CSX. Through the Third Track Improvements, VRE and the Commonwealth have worked to fund and construct rail capacity improvements. In 2006, DRPT released the Washington, DC to Richmond Third Track Feasibility Study which identified a cost of over \$307 million (2006\$) to build a third track between Fredericksburg and Washington, D.C, based on minimal engineering.

Today, this project is estimated at over \$430 million including the third track construction costs of Arkendale to Powell's Creek. This cost does not include the cost of a new Rappahannock River bridge at Fredericksburg or a new Potomac River bridge in Washington, DC Project partners continue to work through the challenge of implementing the Third Track Improvements. CSX, Amtrak and DRPT have together identified multiple individual projects in this corridor that will expand passenger rail service and improve existing service through signalization, station and rail infrastructure improvements. Specifically:

- Automatic Train Control Cab signalization - This project includes a signal system upgrade that will improve the safety and efficiency of VRE, Amtrak and freight train operations by allowing train traffic to operate at greater speeds and closer

intervals than is currently possible, thus improving on-time performance and system reliability. This project is located between Arlington County and Washington, DC and is estimated at \$1.26 million.

- VRE Second Platforms at Woodbridge, Lorton and Rippon Stations – These second platform improvements will allow VRE trains to serve these three stations from both the east and west side tracks, increasing the efficiency of commuter train movements. This project is estimated at \$16.48 million.
- Arkendale to Powell's Creek 11.4 Mile Third Track and Station - This project includes the VRE Cherry Hill Station and Third Track, which will improve passenger rail service in this 11.4 mile section between Powell's Creek and Arkendale in the I-95 corridor. This \$72.1 million project incorporates the estimated \$21.86 million for construction of a new VRE station at Cherry Hill, slope stabilization, a parking facility and a highway grade separated bridge over CSX tracks.
- VRE proposes to design for construction the remaining segments of the CSX third main track section from Ravensworth, located north of Lorton, to Fredericksburg in the I-95 corridor. The additional third track improvements would increase line capacity, significantly reduce delays and improve reliability for VRE, Amtrak and CSX train operations. This project includes the environmental documentation and 30 percent design to identify specific improvements and costs necessary for the construction of this third track section.

Annual Benefits



Removes over 1.4 million cars from the I-95 corridor



Saves over 7.9 million gallons of fuel



Saves 46,877 tons CO₂ emission

Project Status

Fredricksburg to Washington, D. C. Rail Improvement Status

Task	Proposed Completion Dates
Planning and Analysis	2008
Preliminary Engineering	2009
Final Design	TBD
Construction	TBD
Operation	TBD

Partnership Opportunities

The Fredericksburg to Washington, DC Corridor project will require a public private partnership between the federal government, the Commonwealth, CSX ,VRE, and the private sector as it relates to the construction of stations.

Figure 4-17

FREDERICKSBURG TO WASHINGTON, DC VRE EXPANSION ROUTE



INTERCITY RAIL

Improving passenger rail to increase automobile to rail diversions and provide enhanced mobility along I-95, I-64, I-81 and Route 29 is a high priority need in this rail plan. Two projects, the Urban Crescent Express and the TransDominion Express, provide improved mobility options. Some capital costs associated with intercity rail infrastructure overlap with proposed rail improvements provided by CSX in the National Gateway project and by Norfolk Southern in the Crescent Corridor project proposals. The intercity rail cost estimates provided do not allocate costs between freight and passenger rail improvements. As projects are developed, a plan of finance will be developed to provide an appropriate allocation of costs and benefits.

Urban Crescent Express (I-64, I-95, I-295 and Route 460)

Project Cost: \$757 million

The Urban Crescent Express includes rail service between Washington, DC, Richmond and Newport News. Third track capacity improvements north of Fredericksburg have been identified as part of the improvements for VRE between Fredericksburg and Washington, DC. The project plan for the Urban Crescent Express assumes that a passenger rail station will be added in Caroline County as part of a transit-oriented development project. The total estimated project cost range of \$590 to \$757 million represents potential improvements south of Fredericksburg, including the Richmond to Newport News rail line. The total cost includes station improvements and supports improved freight and passenger rail operations along the entire corridor. The Commonwealth, Amtrak, CSX, VRE and Maryland will need to coordinate rail operations in the corridor. Efficiencies can be gained for passenger operations through the sharing of facilities and equipment.

With the vast majority of the state's population and employment along this corridor, the Urban Crescent Corridor presents the best ridership opportunity in the Commonwealth. Total Amtrak ridership in the corridor in 2007 totaled 531,000. Ridership analysis reveals that capital investment could increase ridership by 2015 to a range between 854,100 and 1,059,300 and by 2030 to between 1,187,400 and 1,465,200. Proposed project improvements to achieve this ridership include travel time reductions, increased service frequency, modified station

locations and analysis of alternative rail routes. The ridership projections are based on improvements completed in two phases.

Phase I- (Completed by 2015)

- > Provides an average of 5.5 daily trains serving Newport News, Richmond and Washington, DC
- > Assumes improvements to the platform at Main Street Station, a new station in Newport News and improvements or a new station at Staples Mill
- > Assumes operating speeds of up to 70 miles per hour
- > Assumes on time performance of 85 percent versus 59.2 percent (2007)

Phase II-(Completed by 2020)

- > Provides four new trains with hourly service during peak periods serving Newport News, Richmond and Washington, DC
- > Other Amtrak trains (including Carolinian and long distance trains) are re-routed to also serve Main Street Station
- > Provides service to new Caroline County station
- > Assumes operating speeds up to 70 miles per hour
- > Assumes on time performance of 85 percent

Figure 4-18 shows the estimated passengers over the project timeline and **Figure 4-19** is a location map of the project.

Annual Benefits



Removes over 1.3 million cars from Virginia highways



Saves over 9.5 million gallons of fuel



Saves 62,072 tons of CO₂ emissions

Project Status

Urban Crescent Express Project Status

Task	Proposed Completion Dates
Planning and Analysis	2008
Preliminary Engineering	2009
Final Design	TBD
Construction	TBD
Operation	TBD

Partnership Opportunities

The Urban Crescent project will represent a public private partnership between the Commonwealth, CSX, Amtrak, local/regional bodies and the private sector as it relates to station development.

Figure 4-18
URBAN CRESCENT EXPRESS
RIDERSHIP PROJECTIONS

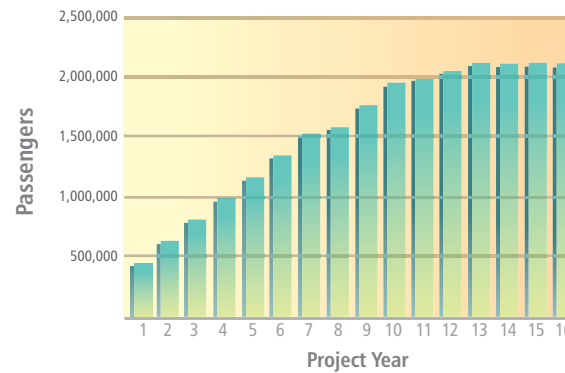


Figure 4-19
URBAN CRESCENT EXPRESS ROUTE



TransDominion Express (TDX) (I-81 and Routes 29/460) Project Cost: \$206 million

The proposed TransDominion Express (TDX) will help manage highway congestion and improve mobility along the Route 29, I-81 and Route 460 corridors. The project consists of improved travel times, more frequent service to Lynchburg and Charlottesville and expanded service to Roanoke, Bristol and Richmond. The total estimated project cost range of \$206 million was updated in late 2007 and is expressed in 2010 dollars. The cost estimate includes full initiation of the service, including upgrades of passing tracks, stations, locomotives, passenger cars and other track improvements to support higher speeds needed for passenger rail. The Norfolk Southern, the Commonwealth, Amtrak and VRE will need to coordinate improvements and operations in the corridor given that VRE long range plans may also include service extensions along this corridor. **Figure 4-20** illustrates the proposed routing for the TDX.

The TDX corridor has been the subject of numerous studies that yielded varying estimates of ridership and feasibility of the project from a cost effectiveness perspective. DRPT has updated ridership estimates for the entire corridor.

Development of the TDX Corridor is proposed in phases with a full implementation by 2030.

- With no service improvements, annual Amtrak ridership between the Washington, DC area and Lynchburg is estimated to be between 71,800 and 90,900 by 2030.

- Phase 1 incorporates the enhancement of up to two daily round trip trains from Washington, DC to Lynchburg.
 - By adding one daily round trip train in the corridor annual ridership would increase to between 117,900 and 149,300 by 2030.
 - By adding two daily round trip trains in the corridor annual ridership would increase to between 152,800 and 193,300 by 2030.
- Phase 2 incorporates the extension of one daily round trip train from Lynchburg to Roanoke, providing daily round trip service from Roanoke to Washington, DC
 - By extending one of the two Lynchburg trains to Roanoke, additional ridership would be gained in the range of 176,400 to 223,200 by 2030. This indicates an annual ridership between Lynchburg and Roanoke of 23,600 to 29,900 by 2030.
- Phase 3 incorporates the extension of one daily round trip train from Roanoke to Bristol.
 - Ridership estimates for a Roanoke to Bristol extension of service are currently being completed and are anticipated in late fall/winter.
- Phase 4 incorporates the extension of one daily round trip train from Lynchburg to Richmond.
 - Ridership estimates for a Lynchburg to Richmond extension of service will be evaluated once the implementation of initial phases of service has begun.

A station at Bealeton may provide increased ridership along the corridor.

DRPT is proposing the development of the TDX Corridor based on the aforementioned phases consistent with service implementation triggered by the achievement of ridership goals and revenue metrics that will need to be developed.

Annual Benefits Phase I (combined with the Alexandria to Manassas Project)



Removes 53,091 cars from I-81 & Rte 29 corridors



Saves over 164,637 gallons of fuel



Saves 983 tons CO₂ emissions

Project Status - Phase I

TransDominion Express Project Status	
Task	Proposed Completion Dates
Planning and Analysis	2008
Preliminary Engineering	2009
Final Design	2009
Construction	2010
Operation	2010

Figure 4-20

PROPOSED TRANSDOMINION EXPRESS (TDX) CORRIDOR LOCATION



Partnership Opportunities

The TDX project will require a public private partnership between the Commonwealth, Norfolk Southern, Amtrak and federal partners, given that this project is located within the area of freight rail projects identified by Norfolk Southern for the Heartland, Crescent and Coal corridors.

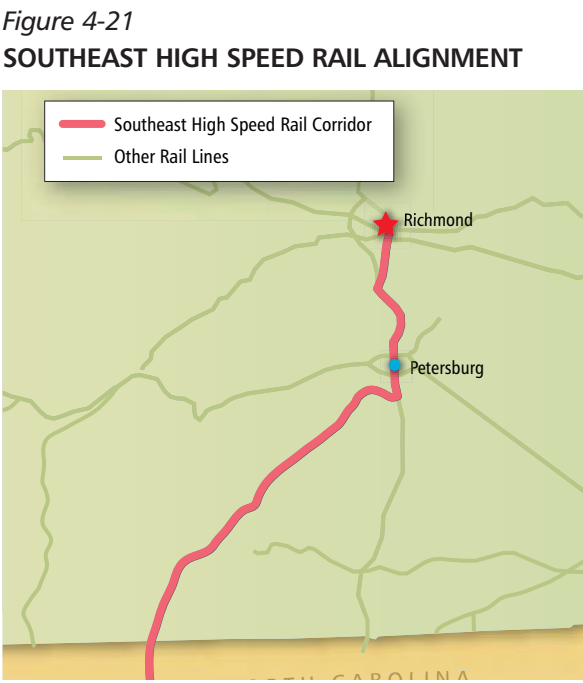
High Speed Rail

High Speed Rail Initiative Costs	
Project	Costs
Southeast High-Speed Rail	\$ 1.2 billion

Southeast High Speed Rail Project (I-95, I-295, I-85, I-64 and Route 460)
Project Cost: \$1.2 billion

DRPT continues to advance high speed rail in Virginia. DRPT is conducting studies for higher speed rail connections between Hampton Roads and between Main Street Station in Richmond to Washington, DC In addition, the North Carolina Department of Transportation (NCDOT) and DRPT submitted the Tier 1 Draft Environmental Statement in 2002, designating the rail corridor between Washington, DC and Raleigh, NC for high speed rail. Currently, NCDOT in cooperation with DRPT is taking the lead in completing the Tier 2 Environmental Impact Statement for railway and associated highway improvements for the proposed 168-mile Southeast High Speed Rail Corridor between Richmond’s Main Street Station and downtown Raleigh, NC. **Figure 4-21** illustrates the Southeast High Speed Rail alignment.

The total minimum estimated project cost of \$712.5 million includes the 95 miles from Richmond to North Carolina and approximately \$500 million in improvements between Richmond and Hampton Roads. Not included in this infrastructure estimate is



the estimated cost of trains and additional speed and capacity improvements that will be needed between Washington, DC and Richmond to accommodate rail operations above 90 miles per hour. Accordingly, the projected cost of \$1.2 billion is a partial cost estimate. This cost estimate does not include the cost of major river and stream crossings in the corridor including a new Rappahannock River bridge in Fredericksburg and a new Potomac River bridge in Washington, DC It should be assumed that significant federal investment will occur along with CSX agreement for electrification of the corridor if this project is to become a reality. Legislation by the Senate and the House of Representatives that was recently passed but not yet enacted includes funds to support high speed rail development and implementation.

Annual Benefits

Removes over 1.1 million cars from Virginia and North Carolina highways

Saves over 5.6 million gallons of fuel

Saves 33,713 tons CO₂ emissions

Project Status

Southeast High-Speed Rail Project Status	
Task	Proposed Completion Dates
Planning and Analysis	2011
Preliminary Engineering	2011
Final Design	TBD
Construction	TBD
Operation	TBD

Partnership Opportunities

The Southeast High-Speed Rail project will require a public private partnership between the Commonwealth, North Carolina, Amtrak, CSX, Norfolk Southern and Federal partners.

Chapter 5

Future Funding Opportunities and Needs for Rail Projects

Virginia has an ambitious rail agenda of alleviating congestion and creating a rail system appropriate for future passenger and freight growth. The challenge is finding the resources to get it all done. Factors influencing the funding picture for Virginia's rail projects are:

- ❑ Demand for passenger service is growing statewide, as gasoline prices and less attractive aviation options drive up demand for VRE and Amtrak service, both of which travel on rail tracks owned by freight railroads.
- ❑ Freight railroads, too, are seeing greater demand on their systems. Capacity expansion and other capital investments will be necessary before accepting additional passenger service.
- ❑ Freight rail operates at a profit and CSX and Norfolk Southern have a responsibility to their shareholders to remain so. Passenger rail in the United States requires a subsidy.

- ❑ Virginia has several potential funding options for passenger and freight rail. These options vary according to their source, uses and availability.
- ❑ The Commonwealth is fortunate to have created a dedicated funding source for freight and passenger rail investment — the Rail Enhancement Fund (using a portion of the dedicated rental car tax), the Rail Preservation Program for shortline railroads and Rail Capital Bonds. Virginia carefully manages its funding programs, setting minimum partner contributions and requiring that public benefits produced by rail projects exceed the Commonwealth's investment.
- ❑ New federal funding may become available in the form of capital grants for passenger rail projects. Virginia will have to prepare by developing a financing plan in order to compete for federal funds.

With many worthwhile projects, Virginia faces a dilemma: the expansion of rail in Virginia faces both operational and financial constraints. Demand for passenger service is growing across the state. VRE is approaching capacity and ridership is expected to double in the next 20 years. Improved passenger rail service is desired along the major corridors within the Commonwealth. At the same time, the state's freight rail partners are carrying increased volumes of freight traffic and will require capacity expansion and other capital investment before accepting additional passenger service. This increase in rail freight traffic is beneficial to the state transportation system as trucks — which create greater congestion and emissions — are removed from the roadways.

Meanwhile, Amtrak is shifting its strategic focus to passenger rail corridors, with states becoming "purchasers" of service and bearing increased financial responsibility. Supporting this shift is a new movement in Congress that proposes to authorize significantly increased funding for Amtrak and capital grants to states for passenger rail projects.

Two bills have recently passed (S. 294 and H.R. 6003) that would facilitate grants to states to fund improvements to intercity rail. The Virginia Statewide Rail Plan, when finalized, will meet the requirements established by federal legislation to secure future federal funding that may become available.

Sources of Funds

Virginia has many potential funding options for passenger and freight rail. These options vary according to their source (private/railroad or public state, local and federal funds, as well as fares), their uses (stations, rolling stock such as railcars, locomotives, etc., right-of-way, operations and maintenance) and their availability (currently in use versus potentially available in the future).

1. Railroads

The railroads that operate in Virginia have willingly participated in the Commonwealth's programs in numerous public private partnership projects. These projects have included initiatives focused on reducing truck traffic leaving the Port of Virginia as well as projects that benefit both freight and passenger rail in the I-95 and I-81 corridors. The Commonwealth's rail programs generally require a 30 percent match from sources other than the Commonwealth or the federal government.

To date, the minimum 30 percent match has not been an issue with respect to the projects that are currently under contract. The expectation is that the railroads would continue to contribute to rail projects at a similar or higher share in the future. A key emphasis moving forward is the development

and execution of agreements that provide dual benefits for passenger and freight rail projects.

2. Commonwealth of Virginia

Four programs provide the bulk of rail funding. These are the Rail Enhancement Fund, the Rail Preservation Fund, Transportation Capital Project Revenue Bonds and the Rail Industrial Access Fund. Based on existing funding levels, the rail program revenue outlook derived from these funds is shown in *Figure 5-1* for the Fiscal Years 2009 through 2035.

The Rail Enhancement Fund was established in 2005. The fund provides dedicated state funding for acquiring, leasing and/or improving railways or railroad equipment, rolling stock, rights of way or facilities for freight and/or passenger rail transportation purposes whenever the Commonwealth Transportation Board determines that it is for the good of a region of the Commonwealth or the Commonwealth as a whole. The source of revenues for the Rail Enhancement Fund is a portion of the three percent vehicle rental tax and the interest earned on cash balances — a total of approximately \$23.5 million in FY2008.

The Rail Preservation Fund was established in 1991. The fund provides state financial support to preserve, continue and increase the productivity, safety and efficiency of shortline railway transportation logistics in Virginia. Through projects funded by the Rail Preservation Program, a freight rail transportation alternative is provided to businesses and industries in areas of the

Commonwealth that otherwise would not have these options. This program has become a key component of the Commonwealth's efforts to attract and maintain business in Virginia. This fund receives a \$3 million annual allocation of highway construction funds and the interest earned on cash balances to fund shortline rail improvement projects.

Capital Project Bonds for transit and rail improvements were established by the General Assembly in 2007. The bond package includes a minimum of 4.3 percent of available bond funds specifically for rail transportation. This equates to approximately \$4.3 million in FY2008 and then about \$12.9 million each year afterward until the total of \$3 billion of authorized bonds are fully allocated in FY2018. If these bonds were to be extended or a new source of revenue was added to replace bonds after 2018 through FY2035, approximately \$220 million in additional revenue would be available for projects. The projects funded with capital bond proceeds are administered through the Rail Enhancement Fund or the Rail Preservation Program for rail capital projects.

The Rail Industrial Access Fund was established in 1986. The fund provides financial support for projects that produce freight rail access to businesses in Virginia in conjunction with the Virginia Economic Development Partnership, County and Municipal Economic Development Departments, railroads and private industry. In 1995, the Commonwealth Transportation Board passed a resolution for the use of Industrial Access Railroad Tracks Program to serve as an incentive to

Figure 5-1

RAIL PROGRAM REVENUE OUTLOOK

Fiscal Year	Rail Enhancement Estimated Revenue (\$ Million)	Rail Preservation Estimated Revenue (\$ Million)	Capital Project Bonds Estimated Revenue (\$ Million)	Rail Industrial Access Estimated Revenue (\$ Million)	Total (\$ Million)
2009	24.2	3.3	12.9	1.5	41.9
2010	25.0	3.3	12.9	1.5	42.7
2011	25.8	3.3	8.6	1.5	43.5
2012	26.7	3.3	12.9	1.5	44.4
2013	27.6	3.3	12.9	1.5	45.3
2014	28.6	3.3	12.9	1.5	46.3
2015	29.6	3.3	12.9	1.5	47.3
2016	30.6	3.3	12.9	1.5	48.3
2017	31.6	3.3	12.9	1.5	49.3
2018	32.7	3.3	12.9	1.5	46.1
2019	33.8	3.3	0	1.5	38.6
2020	35.0	3.3	0	1.5	39.8
2021	36.1	3.3	0	1.5	40.9
2022	37.4	3.3	0	1.5	42.2
2023	38.6	3.3	0	1.5	43.4
2024	40.0	3.3	0	1.5	44.8
2025	41.3	3.3	0	1.5	46.1
2026	42.7	3.3	0	1.5	47.5
2027	44.2	3.3	0	1.5	49.0
2028	45.7	3.3	0	1.5	50.5
2029	47.2	3.3	0	1.5	52.0
2030	48.8	3.3	0	1.5	53.6
2031	50.5	3.3	0	1.5	55.3
2032	52.2	3.3	0	1.5	57.0
2033	54.0	3.3	0	1.5	58.8
2034	55.8	3.3	0	1.5	60.6
2035	57.7	3.3	0	1.5	62.5
Total	\$1,043.4	\$89.1	\$124.7	\$40.5	\$1,297.7

encourage industrial or commercial development in the Commonwealth of Virginia. Successful candidate projects will produce significant positive economic impacts. Funding for this program is expected to average \$1.5 million per year for future years.

Other Commonwealth Sources. Virginia also provides financial support for public transportation systems in the Commonwealth. State funds are provided to support capital and operating expenses for transit systems and often are used to help provide matching funds for federal grants from the Federal Transit Administration. Two rail projects in Virginia currently receive both federal and state public transportation grants. VRE commuter rail service and the Main Street Station multimodal facility in Richmond both meet the federal and state requirements for public transportation grants. Commuter rail service and multimodal transportation projects with a bus transit component qualify under these programs. In 2007, the Commonwealth significantly increased investments to support transit capital and operating expenses through the use of bond funds for capital and recordation taxes to boost operating assistance. The overall funding for these transit programs increased by 45 percent as a result of 2007 action by the Governor and General Assembly. However, increases in fuel prices and greater demand for public transportation have all but consumed these gains in state financial support for public transportation.

3. Local Jurisdictions

Local jurisdictions usually prefer to see clear local public benefit and equitable cost sharing before they are willing to invest local revenues in transportation projects. For this reason, passenger rail/multimodal stations represent the best opportunity for utilization of local funding in developing a capital plan for passenger rail expansion. Local funds can be used for the initial purchase or lease of a pre-existing station or land, for station construction and renovation, for construction of parking and for ongoing station expenses (cleaning and maintenance, security, etc.). Station investment is often acceptable to localities, since the investment stays within the immediate community. Further, through the application of transit-oriented development principles, local investment can spur creative multi-use destinations and additional economic development, and as well as offer the potential for the creation of intermodal links (such as airport stations or the relocation of intercity bus terminals).

Local jurisdictions often will need to consider alternatives to city or county general funds, which can be used on many projects, but which are often consumed by competing needs (public safety, health, schools, etc.). Some jurisdictions in Northern Virginia use local general funds to assist in the implementation and ongoing operations of VRE service. The investment of local funds into passenger rail programs is critical as it creates a greater sense of ownership, helping the service find successful solutions to land use and operational issues related to service frequency and expansion. Alternative funding vehicles available include private sector

partnerships, either through an economic development district or through the joint development of parking or retail, a special assessment district or the issuance of debt against the increased tax revenues resulting from the increased real property values and stimulated economic investment, which creates more taxable property. Tax Increment Financing, as this latter method is commonly labeled, dedicates the future increased tax revenues to finance debt issued to pay for the project.

Additionally, in Virginia, jurisdictions may elect to program a portion of their allotments of state highway funds under the Urban or Secondary Roads program to support passenger rail projects. These programs currently are severely financially constrained and in most cases are not a likely source for rail project funding. In Virginia's largest urbanized areas, local jurisdictions also play a role in the possible use of certain federal funds that are programmed at the regional level through Metropolitan Planning Organizations (MPOs). The MPOs may program certain Federal Highway allocations to help fund rail capital improvements such as station improvements.

4. Federal Funding

On the federal side, the nature of the passenger rail service determines its eligibility for federal funding. The U.S. DOT classifies passenger rail services as either commuter rail service (handled by the Federal Transit Administration [FTA]) or intercity passenger rail service (handled by the Federal Railroad Administration [FRA]). In Virginia, only the passenger

services operated by VRE meet the FTA definition of commuter rail service. The VRE services generate and are eligible for FTA funds under both the Section 5307 (urbanized area) and Section 5309 (fixed guideway modernization) federal formula programs that are used for capital projects in the two service corridors.

Until recently, there was no federal funding program to assist states with intercity passenger rail projects. However, in January, 2008 the FRA announced a new Capital Assistance to States - Intercity Passenger Rail Service Program. The program made a modest \$30 million in Federal matching funds available directly to states through grants to fund up to 50 percent of the cost of capital investments and planning activities necessary to achieve tangible improvements to or institute new, intercity passenger rail service. The program focuses on projects that lead to an on-time performance of 80 percent or greater, reduce travel times, increase service frequency or enhance service quality for intercity rail passengers. Virginia has submitted two grant applications under this program that will support 50 percent of project costs to support planned improvements between Fredericksburg and Washington, DC

Far more promising are the two Amtrak reauthorization bills (S. 294 and H.R. 6003) that cleared their respective houses with veto-proof majorities. Both S. 294: Passenger Rail and Investment Improvement Act of 2007 and H.R. 6003: Passenger Rail Investment and Improvement Act of 2008 contain a provision that authorizes the

U.S. DOT to make grants to states to fund improvements to intercity rail. *Figure 5-2* depicts the level of funding that could potentially be available under the provisions of these two bills. The actual estimated outlays are significantly lower than the authorized amount in the bills.

There are other limited federal funding sources that can support some capital expenses for passenger rail transportation. For example, limited federal funds may be available to support station expenses through historic preservation funds and Department of Homeland Security funding for security upgrades (e.g., CCTVs). These funding sources generally require a federal earmark. Improvements to grade crossings may also be eligible for federal funding through the FHWA grade crossing program or the FRA Sealed Corridor program.

Finally, both Congestion Mitigation Air Quality (CMAQ) and Surface Transportation Funding (STP) programs have specific application to both capital project elements of passenger rail service expansion (CMAQ and STP) and the start-up costs associated with operations in the first three years (CMAQ). These funds are allocated to the Northern Virginia, Richmond, Hampton Roads and Fredericksburg urbanized areas and are programmed by the regional MPOs. The Commonwealth provides the 20 percent match that is generally required by these federal programs from the Priority Transportation Fund.

Regardless of the source or program, Virginia is preparing to capture future federal funding. If either

Figure 5-2

S. 294 AND H.R. 6003 GRANTS TO STATES FOR RAIL AND CONGESTION REDUCTION PROJECTS

S. 294 By Fiscal year, in Millions of Dollars							
	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013	FY 2008-2013
Grants to States for Rail Projects							
Authorization Level	\$100	\$246	\$274	\$369	\$406	\$ -	\$1,395
Estimated Outlays	\$22	\$72	\$139	\$205	\$277	\$ -	\$715
H.R. 6003 By Fiscal year, in Millions of Dollars							
	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013	FY 2009-2013
Grants to States for Rail Projects							
Authorization Level	\$ -	\$850	\$852	\$852	\$849	\$849	\$4,252
Estimated Outlays	\$ -	\$85	\$255	\$511	\$681	\$808	\$2,340
H.R. 6003 By Fiscal year, in Millions of Dollars							
	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013	FY 2009-2013
Grants to Reduce Rail Congestion							
Authorization Level	\$ -	\$100	\$102	\$104	\$106	\$106	\$520
Estimated Outlays	\$ -	\$75	\$97	\$103	\$105	\$107	\$487

S.294 or H.R. 6003 passes in its current form, capital grants to states would likely become available beginning in 2010 or 2011. SAFETEA-LU, the current national transportation authorization program, expires after FY2009, and reauthorization may offer additional funding sources, including possible expansion of existing programs that have not been fully appropriated as authorized (such as the grade crossing program and the high speed rail corridor development program), as well as the potential for a significant FRA investment program. Even in the absence of special federal matching funds related to Amtrak service, some funding may be available to Virginia from Amtrak's general capital budget. Amtrak has mandatory station upgrades required under the Americans with

Disability Act that may contribute to some of the desired station upgrades. In addition, if Amtrak's general capital budget were increased, Virginia will be prepared to make the case for investments and improvements within the state and help encourage federal funding with the availability of state resources.

5. Passenger Fares

Fare revenues are generally used to defray a portion of the operating costs. As with transit service everywhere else in the country, both commuter and intercity rail require a subsidy to support capital and ongoing operating costs. The subsidy required ranges based on the type of service desired. VRE has established policy that generally requires that 50

Figure 5-3
HEARTLAND CORRIDOR TUNNEL CLEARANCE
FUNDING SOURCES
(\$160 MILLION PROJECT COST)

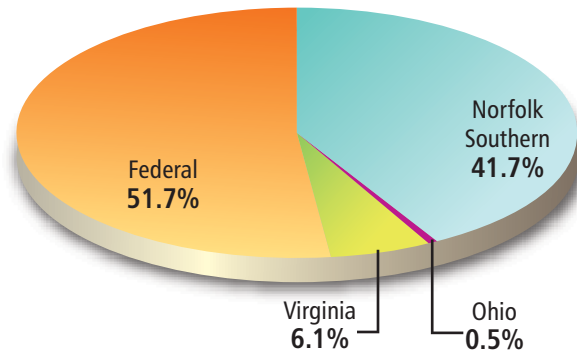
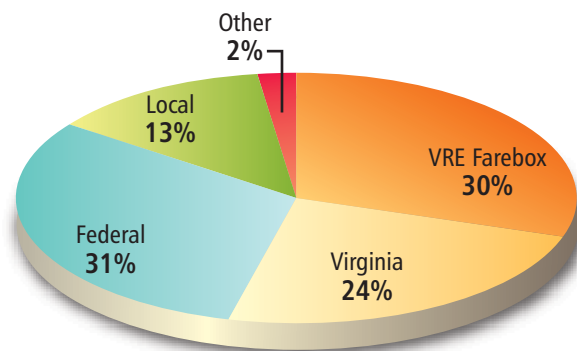


Figure 5-4
VIRGINIA RAILWAY EXPRESS REVENUE
FUNDING SOURCES
(\$58.5 MILLION/YEAR
AVERAGE TOTAL REVENUE 02-07)



percent of its operating costs are recovered from passenger fares. This requirement is sound public policy that must be balanced and take into consideration other factors that support the implementation of passenger rail, such as improved mobility, particularly in smaller urban areas.

Summary

Virginia is fortunate to have established several dedicated funding sources for its rail program. Any successful rail projects in Virginia will need to bring together multiple funding sources and partners to support various project elements. The Heartland Corridor project and VRE services provide successful templates for sharing costs and benefits. **Figure 5-3** depicts the multiple funding source percentages for the \$160 million tunnel clearance project as part of the multi-state Heartland Corridor Initiative. **Figure 5-4** is a summary of a six-year (2002 to 2007) average of the multiple revenue funding sources for VRE.

Implementation of intercity rail provides benefits all along the corridors that VRE serves. However, intercity rail, like VRE, will face challenges in securing funding from all of the beneficiaries. Given the length in terms of route miles that intercity rail service may operate from Newport News to Washington, DC or Bristol to Washington DC, Virginia will have to assume a leadership role by providing a business model that collects revenues from various sources, negotiates with railroads for operating slots and improvements and, ultimately, executes an agreement to fully reimburse Amtrak for its costs of operating service in the Commonwealth.

From a policy perspective, it is clear that the Commonwealth is not choosing between freight or passenger rail along its well-traveled and congested corridors. DRPT is focused on crafting multimodal solutions that will support both, given our desire to reduce congestion, support economic prosperity and enhance the quality of life for citizens. Given the costs of the projects and limited public funding, partnerships and collaboration are key ingredients to moving projects from dreams to operation.

Chapter 6

Next Steps and Conclusion

This draft Statewide Rail Plan identifies high priority projects. It does not recommend funding allocations or provide an implementation plan. Funding and the implementation plan for short term projects will be defined in the Rail Action Plan, currently in development and scheduled for publication in September 2008. The Rail Action Plan will outline a strategy for the allocation of resources between passenger and freight rail projects statewide, with a focus on identifying specific projects for funding and implementation over the next six years. Projects will be narrowly defined, with anticipated funding sources for both public and private sector investment. The six-year selection of projects for implementation will be guided by the evaluation of projects based on the achievement of state transportation goals and the determination of public benefits to be achieved through each project.

Key actions between July and November 2008 include the following:

- ❖ Responding to the General Assembly directive defined in the 2008 Appropriations Act for the establishment of a resource allocation strategy for freight and passenger rail initiatives through the development of the Rail Action Plan.
- ❖ Working with potential project partners to further define funding strategies, project scopes and schedules for specific rail improvement projects.
- ❖ Identifying potential federal funding sources and ensuring that the appropriate resources are in place at the state and local levels to advance projects that could receive federal funding.
- ❖ Finalizing the Statewide Rail Plan document.

Public Involvement

DRPT recognizes the importance of public comments in the development of state planning documents, and the Statewide Rail Plan has a clearly defined public involvement process.

April-May 2008 Comments accepted on the public's priorities for passenger and freight rail improvements in Virginia as part of six public hearings held statewide on the Six-Year Improvement Program.

July 2008 The Draft Statewide Rail Plan will be issued for public comment. The draft Plan will be shared with the Commonwealth Transportation Board and the Rail Advisory Board, and five public meetings will be held statewide. The draft plan will be available online at DRPT's website and at DRPT's Richmond headquarters.

September 2008 The Rail Action Plan will be issued, to include funding strategies and the proposed allocation of resources for freight and passenger rail initiatives statewide. Public comments will continue to be accepted.

November 2008 The Statewide Rail Plan will be finalized, based on comments received and the funding priorities identified through the Rail Action Plan.

Future Rail Plan Updates

It is DRPT's intent that the Statewide Rail Plan will be updated every five years. The Six-Year Improvement Program will be reviewed on an annual basis to:

- ❑ Evaluate rail transportation changes in the context of a multimodal transportation system – particularly passenger rail services (including high speed rail) and intermodal movements through the Ports of Hampton Roads.
- ❑ Respond to any Commonwealth or federal legislation with respect to rail funding programs, safety and security, reporting, environmental and funding program changes.
- ❑ Review implementation of rail plan priorities based on the following transportation goals:
 - Safety and Security
 - Preservation and Management
 - Mobility, Accessibility and Connectivity
 - Economic Vitality and Development
 - Land Use and Quality of Life
- ❑ Evaluate new technologies that could be implemented for rail improvements.

Conclusion

As the preceding chapters have pointed out, rail is vital for the Commonwealth's economy, connecting Virginia to the global marketplace both overseas through connections at the Ports of Hampton Roads and in North America through rail connections that extend to the nation's East and West Coasts, north to Canada and south to Mexico.

Virginia's rail system faces a challenging future. This is due to several factors:

- ❑ Population in the U.S. is growing, and the Commonwealth's economic viability is drawing an even larger percentage increase than that of the nation overall. This means more crowded roadways, greater need for increasingly expensive fuel, increased demand for goods and services and a concern for maintaining natural resources and the environment.
- ❑ Passenger rail is seeing increasing demand in Virginia, particularly in its major metropolitan areas (Northern Virginia, Richmond and Hampton Roads), as congestion, fuel costs and environmental concerns make commuter and inter-city train travel a more attractive option.
- ❑ There is also increasing demand for freight rail. Partly this is due to the overall increase in demand for goods, such as coal, that currently use Virginia's rail system. Partly this is due to a desire to move freight from trucks to rail to obtain greater fuel efficiency, address roadway congestion and improve CO₂ emissions.
- ❑ Passenger and freight rail share tracks that are owned by private freight railroads. The dual demands of increased passenger and freight rail — which can have competing needs for track availability — have to be managed strategically in order to support and sustain the growth and quality of life to which the Commonwealth is committed.

By thinking in terms of an integrated multimodal transportation corridor network, the Commonwealth has accomplished much to meet these challenges, from rail line improvements and expansion to the establishment of a dedicated funding source. This Statewide Rail Plan presents rail needs for the future that build on past achievements, with a focus on identifying key corridors and potential investments.

Given the costs of projects and limited public funding available, partnerships and collaboration will be key to moving projects from dreams to operation. The Commonwealth is committed to enhancing partnerships with the private sector, including railroads, local governments and regional planning organizations, to attract private capital and to achieve its strategic goals.

Virginia has an ambitious rail agenda of alleviating congestion and creating a rail system appropriate for future passenger and freight growth. The Commonwealth cannot choose between freight or passenger rail. We need to focus on multimodal solutions for both that support our desire to reduce congestion, support economic prosperity and enhance the quality of life for all Virginians.

**Thank you for your interest
and support.**

